SEPTEMBER 15, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

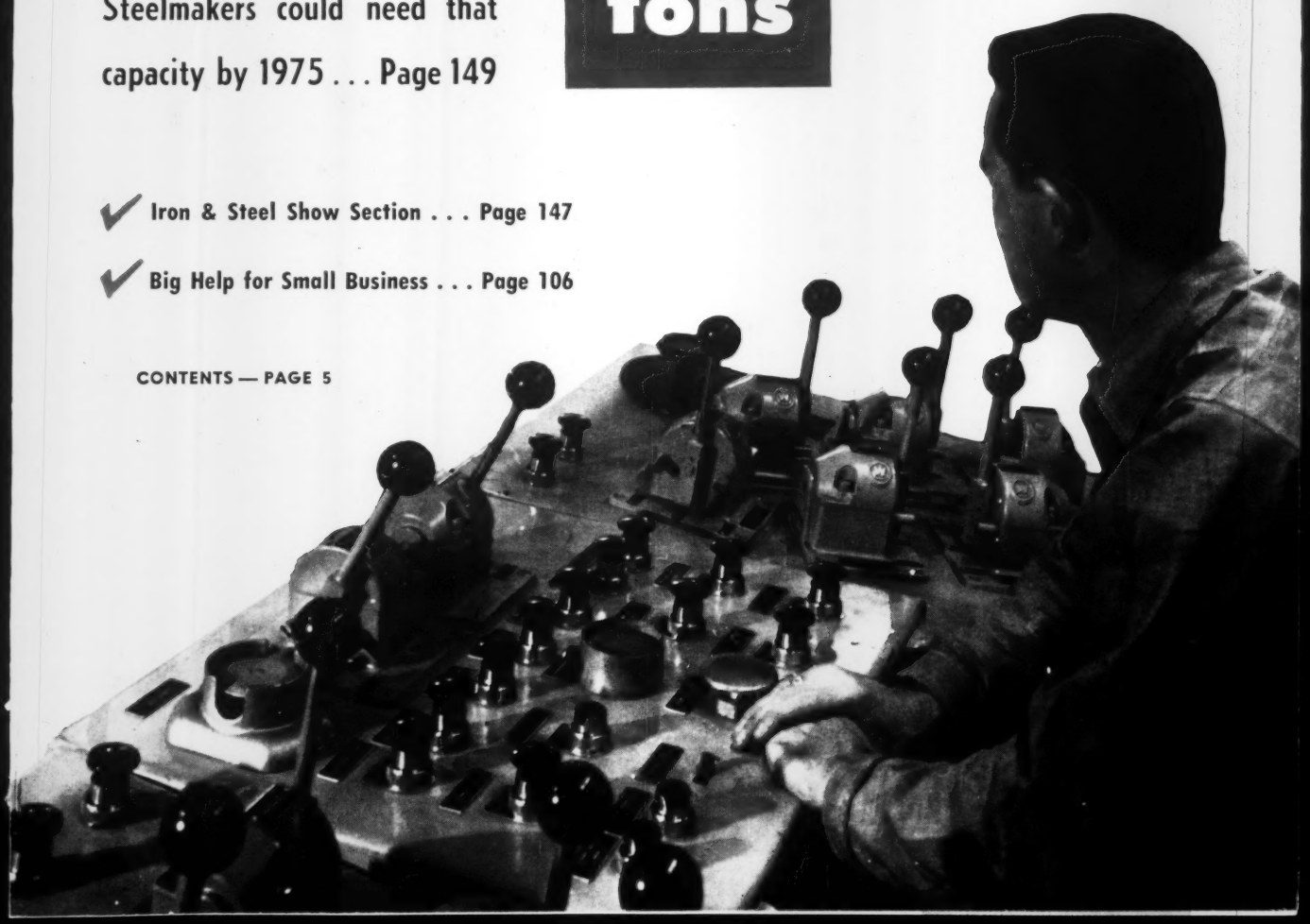
250 million tons

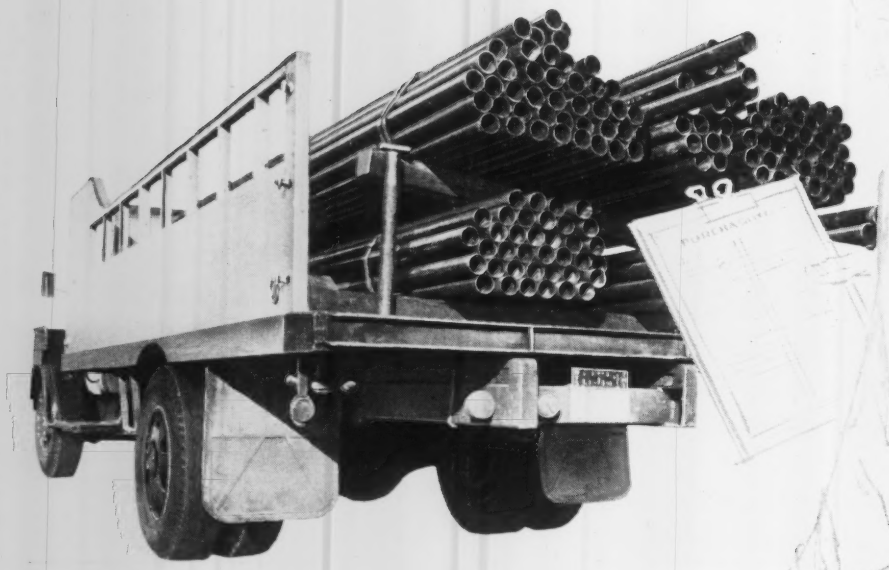
Steelmakers could need that capacity by 1975 . . . Page 149

✔ Iron & Steel Show Section . . . Page 147

✔ Big Help for Small Business . . . Page 106

CONTENTS — PAGE 5





B&W distributors offer you local delivery when you need tubing fast

Wherever your plant is located, there's a handy, nearby source of high-quality B&W tubing. You'll find a B&W sales office in all major cities—and distributors handling B&W Tubular Products are located from coast to coast. It means fast service and *dependable* delivery of the tubing you need, when you need it.

And B&W offers an unusually large selection to choose from. There is a complete range of tubing sizes, grades, finishes and analyses ready for delivery. In stainless, carbon, and high-alloy steels. In seamless or welded, pressure or mechanical tubing. You will find too a convenient local distributor of B&W welding fittings, flanges and small diameter pipe.

B&W's nation-wide network of district sales offices stands ready to assist your distributor *and you* in finding the right tubular product for your special application. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pa.

AMERICAN STEEL WAREHOUSE ASS'N

B&W TUBULAR PRODUCTS DIVISION

TA-8031-G4

Seamless and welded tubular products, solid extrusions, seamless welding fittings and forged steel flanges—in carbon, alloy and stainless steels and special metals.

575 Lexington Avenue

6500 tons of structural steel joined with high-strength bolts

Owner and Builder: Sam Minskoff & Sons, Inc.; Architects: Sylvan Bien & Robert L. Bien; Structural Engineers: Weinberger, Frieman, Leichtman & Quinn.

This stunning new office building at Lexington Avenue and East 51st Street is New York's first multi-storied structure clad in gold-anodized metal curtain walls. The 6500-ton steel framework for its 34 stories was erected in comparative quiet, with thousands of Bethlehem High-Strength Bolts used in joining its structural members.

Bolting is Fast

Bethlehem High-Strength Bolts make possible a saving in erection time because they can be installed in a jiffy. With the bolt head grasped by a holding wrench, the nut is drawn up with a pneumatic impact wrench. This provides a sound joint in a matter of seconds. The bolts can also be tightened by means of hand spanners.

Bolting is Quiet

Bethlehem High-Strength Bolts provide a much quieter form of construction than riveting, making them particularly desirable for school and hospital zones. The bolts are installed cold, eliminating the danger from fire or injury from tossed rivets.

Bethlehem High-Strength Bolts are made of a good grade of carbon steel in all popular sizes. They are quenched and tempered to meet the requirements of ASTM Specification A-325. They are fully described in our 24-page illustrated booklet, "High-Strength Bolting for Structural Joints." Ask the nearest Bethlehem sales office to send you a copy.

High-Strength Bolt is used with two hardened washers, placed under head and nut.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. *On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation*

BETHLEHEM STEEL

BETHLEHEM STEEL

No two stamping jobs they handle are alike

On their way to three COMMERCIAL customers are these completed stamping jobs. Jacket tops for water heaters, transformer cases, dished boiler doors—all are total strangers to each other in both design and product application.

Many times a day, every day, this same story is repeated at COMMERCIAL. Except in the case of repeated orders (a frequent occurrence at COMMERCIAL) no two jobs are alike. Their only similarity can be found in the challenges they all present—unusual shapes, close tolerances, hard-to-form metals.

COMMERCIAL offers you 30 years of metal-forming experience, complete tool and die making facilities and a "die bank" of over 20,000 adaptable components. Next time you're in the market for a medium to heavy custom stamping—to 84" in diameter or 7' x 15'—check with our engineers. Write to Commercial Shearing & Stamping Company, Dept. L-38, Youngstown 1, Ohio.

Specialists in the shape of things to come
CUSTOM STAMPING • UPSET FORGING • ROTOFORMING

COMMERCIAL
shearing & stamping

announcing

another NEW HOBART WELDER VALUE

HOBART ac dc POWR WELD

- DC WELDING ranges from 30 to 225 amperes
- 100% DUTY CYCLE: 200 amps. at 25 volts
- SIMULTANEOUS AC POWER 1 to 2 KW when welding in lower ranges
- 5 KW FULL TIME AC POWER for emergency power when not welding
- VISORED CANOPY protects controls
- CONVENIENT CONTROLS all located on one panel
- 5 RANGE SWITCH and rheostat—*no* jacks
- TROUBLE FREE TERMINALS
- AIRCOOLED smooth, quiet 2 cylinder Onan engine
- COMPACT 38" long, 21¼" wide, 25¾" high
- LIGHTWEIGHT 620 lbs. (approx.)

Portable mountings available at extra cost

DC for welding. This Hobart "PowrWeld" brings you all the advantages of DC welding in a compact design. It is independent of electric power supply, with a powerful air cooled engine that eliminates worry about freezing in cold weather. With this new DC Welder, you can handle all types of electrodes in all welding positions, having the advantage of being able to choose either polarity (straight or reverse) with which best results may be obtained on the job at hand.

AC for auxiliary power. From this same generator, you can operate tools that are most essential to the complete welding operation—such as lights, grinders, drills, chipping hammers, without leaving the job for machine adjustments.

AC for full time power. From the same generator, 5 KW AC power may be used to power many different types of electrical equipment, either permanently or on a "standby" basis in case of failure of regular power sources. Equipment such as grinders, drills, saws, lights, compressors, sprayers, vibrators, pumps, hoists, etc. Or—such farm equipment as incubators, brooders, milking machines, water pumps, lights, hay driers, refrigerators and many other items of electrical equipment in use on the farm today. Write today for complete details on this new combination unit. Hobart Brothers Company, Box ST-98, Troy, Ohio, Phone FE 2-1223.

The "PowrWeld" lets the operator change over from DC welding to AC power without leaving the work—without shouting instructions to a helper. He can take all his welding equipment and tools to the job and work uninterrupted until it is completed. Power to weld and power to use tools, alternately or simultaneously. The only combination of its type on the market today.

HOBART

Manufacturers of the world's most complete line of
ARC WELDING EQUIPMENT

You'll want to see and try this NEW combination welder and AC power unit. Use the coupon!

HOBART BROTHERS COMPANY, BOX ST-98, TROY, OHIO

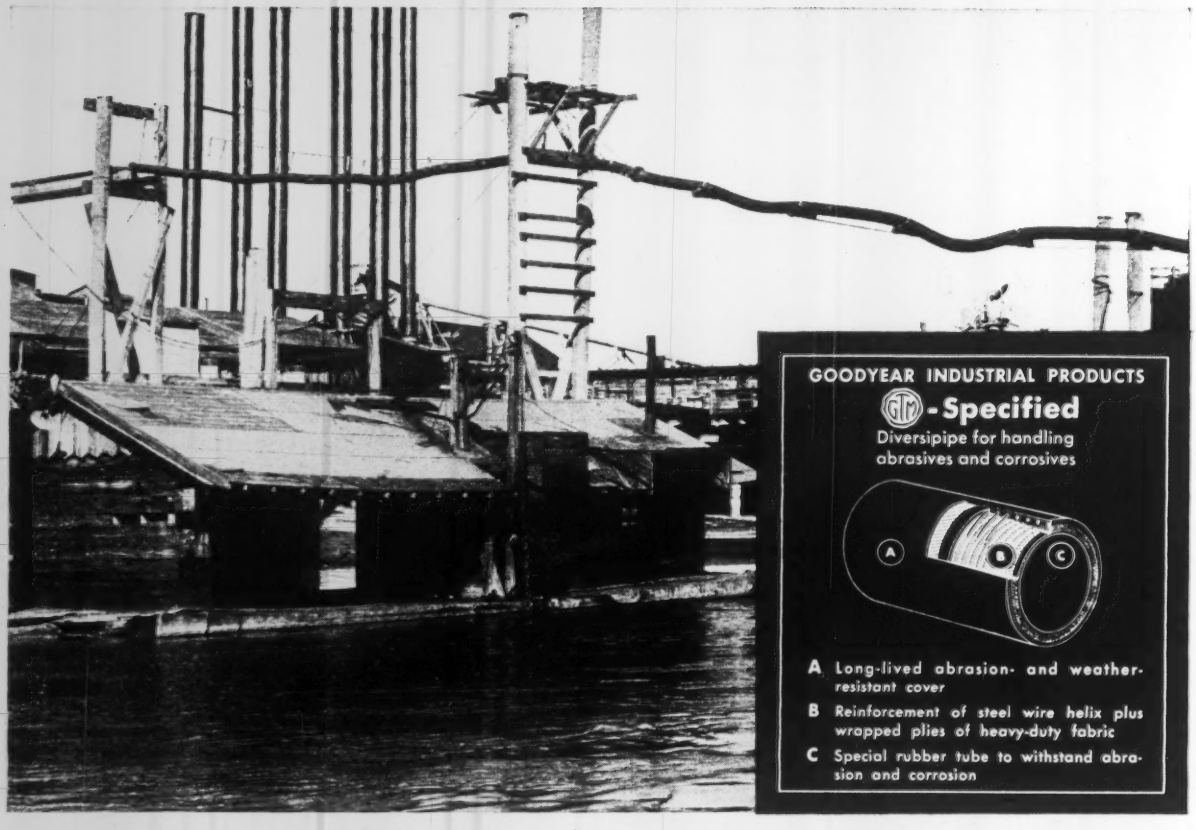
☐ Rush complete information on the new DC Welder—AC Power Combination.

☐ Would also like complete catalog on
☐ Electrodes ☐ Accessories ☐ Other models of arc welders

Name _____

Address _____

City _____ *Zone* ____ *State* _____


GOODYEAR INDUSTRIAL PRODUCTS
G.T.M.-Specified
Diversipipe for handling abrasives and corrosives
A
B
C
A Long-lived abrasion- and weather-resistant cover
B Reinforcement of steel wire helix plus wrapped plies of heavy-duty fabric
C Special rubber tube to withstand abrasion and corrosion

New way to dispose of disposal problems

DISPOSAL OF corrosive bleach liquor posed a real problem at this Northwestern paper mill. One suggestion was to release it along the bottom of the adjoining river–distributing it widely enough to halt the fouling of fishermen's nets and threatened pollution of the water. But not even the strongest steel pipe could stand up under the corrosive flow–or the buffeting of river currents.

Then someone thought of hose–and of consulting the G.T.M.–Goodyear Technical Man. His recommendation: Diversipipe–rugged corrosion- and abrasion-resistant rubber pipe–joined at wide intervals by stainless steel couplings. Vented through these couplings, the troublesome liquor would be thoroughly dispersed. Result: this *Diversipipe installation has kept the river clean for 3½ years–promises years more service.*

Here, then, is a unique, low-cost means of waste disposal – adaptable to many situations. It's another example of the way the G.T.M. can be of invaluable help–wherever industrial rubber products are involved. And he's always quickly available through your Goodyear Distributor–or by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

DIVERSIPIPE by

GOODYEAR

THE GREATEST NAME IN RUBBER

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

This Week in STEEL The Metalworking Weekly

September 15, 1958
Vol. 143 No. 11

EDITORIAL 101

By 1960, U. S. steelmaking capacity will top 148 million tons a year. Prediction: The industry will find that's not enough.

SPECIAL FEATURE 147

Today's Joe Magarac is still a giant of the industry, but his feats are those of brain rather than brawn. You'll find him in the special section which STEEL has devoted this week to the 1958 Iron & Steel Exposition and Convention of the Association of Iron & Steel Engineers.

WINDOWS OF WASHINGTON 110

Scientists invade military management. They'll soon take over U. S. air defense system.

MIRRORS OF MOTORDOM 117

Best industry guesses place 1958 sales of Chrysler Corp. cars at 12 to 14 per cent of total market.

THE BUSINESS TREND 121

Steelmakers take lead in post-Labor Day recovery. Next quarter may be best since recession started.

WHERE TO FIND—

Behind the Scenes 6
Letters to the Editors 10
Editorial & Business Staffs .. 16
Calendar of Meetings 23
Men of Industry 125
New Products 191
New Literature 224
Advertising Index 256

Business— METALWORKING OUTLOOK 97

☑ Capital Spending To Turn Up in Fourth Quarter 103
Industrial Uses for Silver Increase—Roundup and prediction 104
Armco Adds Sintering Plant—It'll process Labrador ores 105
☑ Help for Small Business—How to get it under investment act .. 106
Distributors Being Squeezed—They get aid in fighting back 108
Surviving a Slump—How one distributor managed to do it 109
☑ Listen to October with Sonic Futurama—It's tuned to UAW .. 113
British Steel Slowing Down—Biggest drop is in exports 114
GAMA Sees Sales Gains—Gas appliance prospects brighter 115
Mesta Builds Rolling Mill for Plant in Japan 131
Better Tooling Cuts Part Cost 35%—Cost crisis story 178

AISE Section— CONVENTION PROGRAM 180

Frontispiece—1958 Iron & Steel Exposition and Convention.... 147
☑ Salute to Iron and Steel Engineers—Joe Magarac moves up .. 148
☑ The Steel Industry: A Giant Today, Bigger Tomorrow 149
A Look at Raw Materials—How much will be needed by 1975? .. 152
The Changing Look in Steel Plants and Processes 156
The Change in Steel Mill Products—A ten-year forecast 172

Markets— MARKET OUTLOOK 227

Complete Index to Market News and Prices 227
☑ Off-Grade Steel Is Useful—Competition increases demand 229
Plan Steel Freight Cut—Midwest railroads file new tariffs 230
Zirconium Sponge Reduced—Mallory-Sharon makes sharp cuts.. 232
Steelwork Operation Chart and District Ingot Rates 236
Scrap Is Holding in Slow Market 249
Nonferrous Metals—Diecasting Sales Better 252

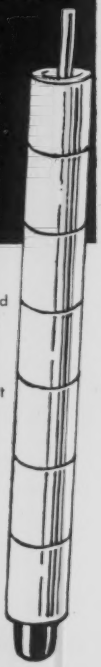
STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1958 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

Index available semiannually. STEEL is also indexed by Engineering Index, 29 W. 39th St., New York 18, N. Y.

℞ for Moisture-Hungry Stopper Rod Tile

WALSH MORT-AIRSET

High Temperature Air-Setting Cement Assures High Moisture Retention . . . Guarantees Stronger, Tougher, Tighter Bond For Stopper Rods



Here's a refractory cement that retains it's original moisture content when applied to "moisture-hungry" tile . . . combines smooth workability with non-shrinking qualities to produce remarkably tight impenetrable joints throughout the complete temperature range to 3000° F.

Try this cement for bonding your stopper rod tile. Note for yourself it's excellent working, drying and non-shrinking properties that deliver easier application, better bond and longer service life. Guaranteed not to "gum up" or form lumps in the drum even after extended periods of storage.

Packed in 500 lb. and 200 lb. drums and smaller steel containers.

Write for literature.

Specialists in Refractories of High Bulk Density and Low Porosity

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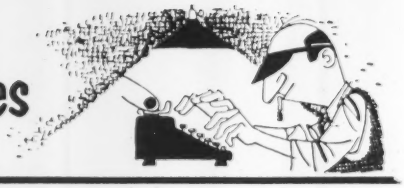
FOR OVER 60 YEARS MANUFACTURERS OF HIGH GRADE REFRACTORIES

behind the scenes



While Iron & Steel Men Gather

What do you think of when you encounter the expression "a divided people"? If we were supine on a couch, hair down, and confessing to a psychiatrist, we'd think twice about telling the truth because the first picture that comes to mind is all the cadavers in the nation's medical schools. Seriously, a divided people could be an ethnic group settled in separate parts of the country; it could be a legion of nationals in violent disagreement; it could even be a mess of feudin' kinfolk. But none of those definitions conforms with Associate Managing Editor Vance Bell's conception of a divided people. Vance divides people into tons of steel capacity and comes up with per capita capacity.

"Check this week's cover," said Vance juggling several assorted division signs; he always keeps a spare supply because when he isn't dividing people into tons, he is sure to be dividing something into something; this is a nervous habit that marks the expert in economics. "That big figure you saw on the cover was 250; it means million tons of capacity. You see, in 1975 we're going to need that much steel to keep us going. Now, if you take all the people who will be living here in 1975, and divide them into 250 million tons, you will get 2262 lb per capita capacity. Exciting, isn't it?"

Vance's tingling figures are only part of the special section highlighting STEEL's Iron & Steel Show issue, beginning on Page 147. The Annual Convention and Exposition of the Association of Iron & Steel Engineers will be at Cleveland Sept. 23 through 26. STEEL salutes the industry with a report on today's progress, together with some predictions.

Bells Bother Belle

Cologne, or Koln, was already a mighty city on the Rhine when the Romans made it a colony in 51 A.D. and called it Colonia Agrippina. Throughout the echoing centuries it acquired profound exemplifications of art, culture, and theology, notably in the form of Rubens, the bones of 11,000 British virgins who were destroyed with St. Ursula, and a cathedral that was begun in 1248.

The Cologne cathedral is considered one of the finest and purest Gothic structures in Europe. Cultured visitors hit airpockets when they sing about its 100 columns, its 511-ft towers, its superb painted windows, but practical people are inclined to sniff, "Eh! Begun in 1248, and not finished until 1880! So what kind of contractors do they have here in Koln?"

Editorial Assistant Mary Ann Stuve visited Europe this summer (looking back, seems as if everybody and his in-laws were touring Europe this summer). Well, Mary Ann had an opportunity to visit Koln on the Rhine because she has relatives there, and naturally she noticed the cathedral, mostly on account of she roomed practically next door to it. Builders of the mighty edifice, both the living and the dead, might be interested in Mary Ann's opinion of the cathedral. "My room," she wrote on a postcard, "is a few steps away. The cathedral has huge bells, and they ring every 15 minutes. I don't like it."

Deep Thought Department

Testimony of Dr. Frederick Charles Schwarz, executive director, Christian Anti-Communist Crusade, before the House of Representatives Committee on Unamerican Activities, May 29, 1957, has been widely reprinted. It's good medicine; we'll give you a sip now and then to stir your flagging corpuscles:

Mr. Arens (director of the committee): I would like to have you elaborate, if you please sir, on the way in which, in your judgment, the ideology and morality of Communism can be exposed for what it is, the fallacies of it actually exposed . . . . .

Dr. Schwarz: I believe that Communism should be taught in the educational system, but I believe it should be taught with a moral directive, in the same way that a medical student is taught that cancer is evil, that tuberculosis is evil, and education about them is directed to their elimination and defeat. If it is presented without oral direction, it appears simply as an alternative economic system with certain superior virtues.

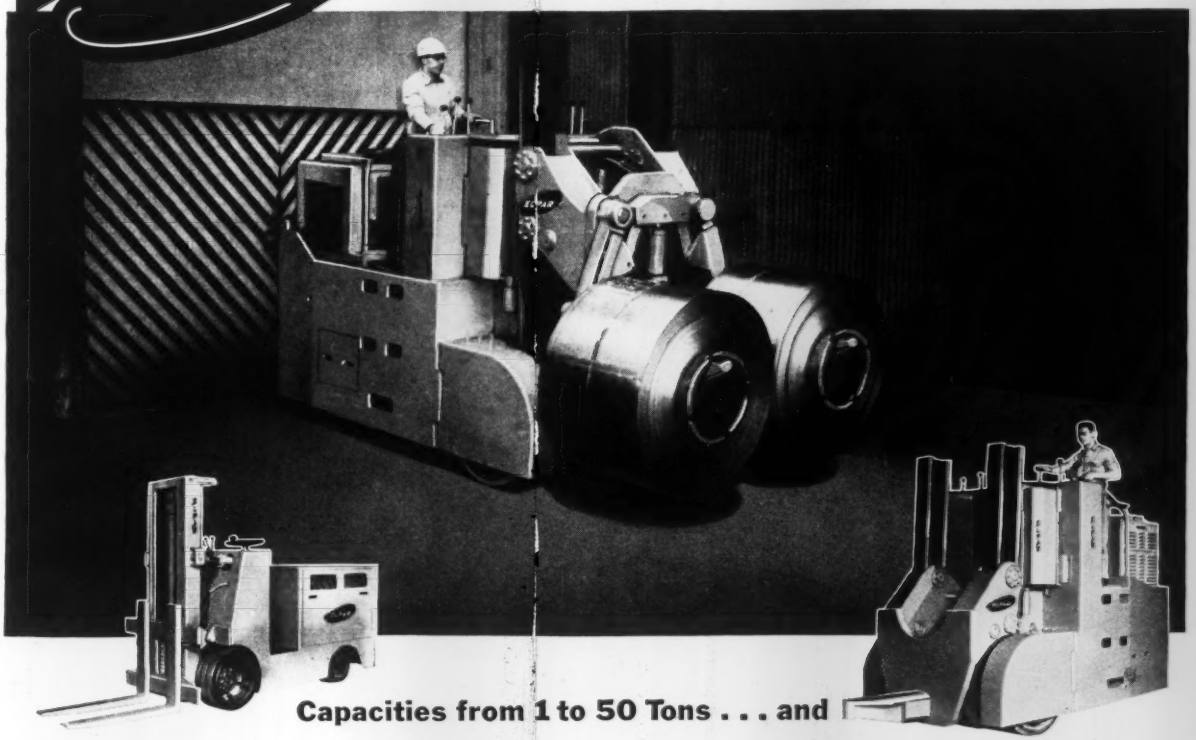
Hold the Phone

A movie doll, when asked for her telephone number, said, "Beeg boy, de nomber ees PRI-X X X X. De som of last four feegers ees how old I am, 24 year. Forst feeger ess 3 times de third, and de sacond ees 2 less dan de fourth, weech ees one more dan twice de third. Come on a my house, I'm a-gonna geeve you candy."

Shrdlu

(Metalworking Outlook—Page 97)

ELPAR® Fork and Ram Trucks



Capacities from 1 to 50 Tons . . . and

Every One a Metals-Handling Money Saver

ELPAR fork and ram trucks give an unequaled combination of handling ease . . . rugged performance . . . low operating and maintenance costs . . . long life. They are the result of 50 years' experience in solving problems unique to metal-working.

With capacities from 2,000 to 100,000 pounds, there's an ELPAR truck to do your toughest handling jobs.

Your local ELPAR man will be glad to survey your plant and assist you in proper truck-to-job application. And he'll explain why ELPAR *electric* trucks give *twice* the life of other power-types—with only *one-third* the operating and maintenance costs.

Send for Heavy-Duty Truck Bulletins and "Gas vs. Electric Truck" folder.

NEW! R-12 Fork and Ram Trucks
Big Load Handling—Small Truck Handling Ease! In capacities from 12,000 to 20,000 pounds, yet they operate easily in confined areas—even freight cars. And they incorporate typical ELPAR features for fast handling with maximum safety: *picture-window vision, dual controls, power steer, power brakes.*

See Actual Demonstration at Iron & Steel Exposition September 23-26, Cleveland Public Auditorium, Booths 210-12, 216-18

ELPAR® ELECTRIC TRUCKS

THE ELWELL-PARKER ELECTRIC COMPANY
4105 St. Clair Avenue • Cleveland 3, Ohio

Twice the Life . . . 1/3rd the Operating Costs

CLARK offers a NEW, IMPROVED

5 SIZES

CLARK BULLETIN 106
Type "B" DC BRAKES

Built to AISE-NEMA standards for use with 600 series mill motors, this new line achieves economies in size without sacrificing ruggedness. These brakes retain the famous Clark "NUT-CRACKER" principle which has proven successful on heavy-duty industrial applications over many years. It assures more dependable operation and longer lining life by providing equal distribution of shoe pressure on the brake wheel. Simplicity of mechanical operating linkage means fewer parts to maintain and simpler adjustments.

FEATURES:

- All maintenance adjustments made from the top.
- Single adjustment for air gap. Built-in indicator.
- Magnet case and coil easily removable and replaceable without disturbing brake adjustment or releasing brake.
- Coil replacement easily done on the job. Epoxy encapsulated coils.
- Wheel and motor armature easily removable as a unit without disturbing brake adjustment.
- Simpler and easier shoe replacement.
- Equal distribution of shoe pressure for more positive braking.
- Self aligning shoes for even distribution of lining wear.
- Torque setting unaffected by lining wear. Built-in torque indicator.
- Cast-steel construction throughout.
- Nitralloy bushings with hardened pins.
- Captive hairpin cotter retainers at all pivot points.

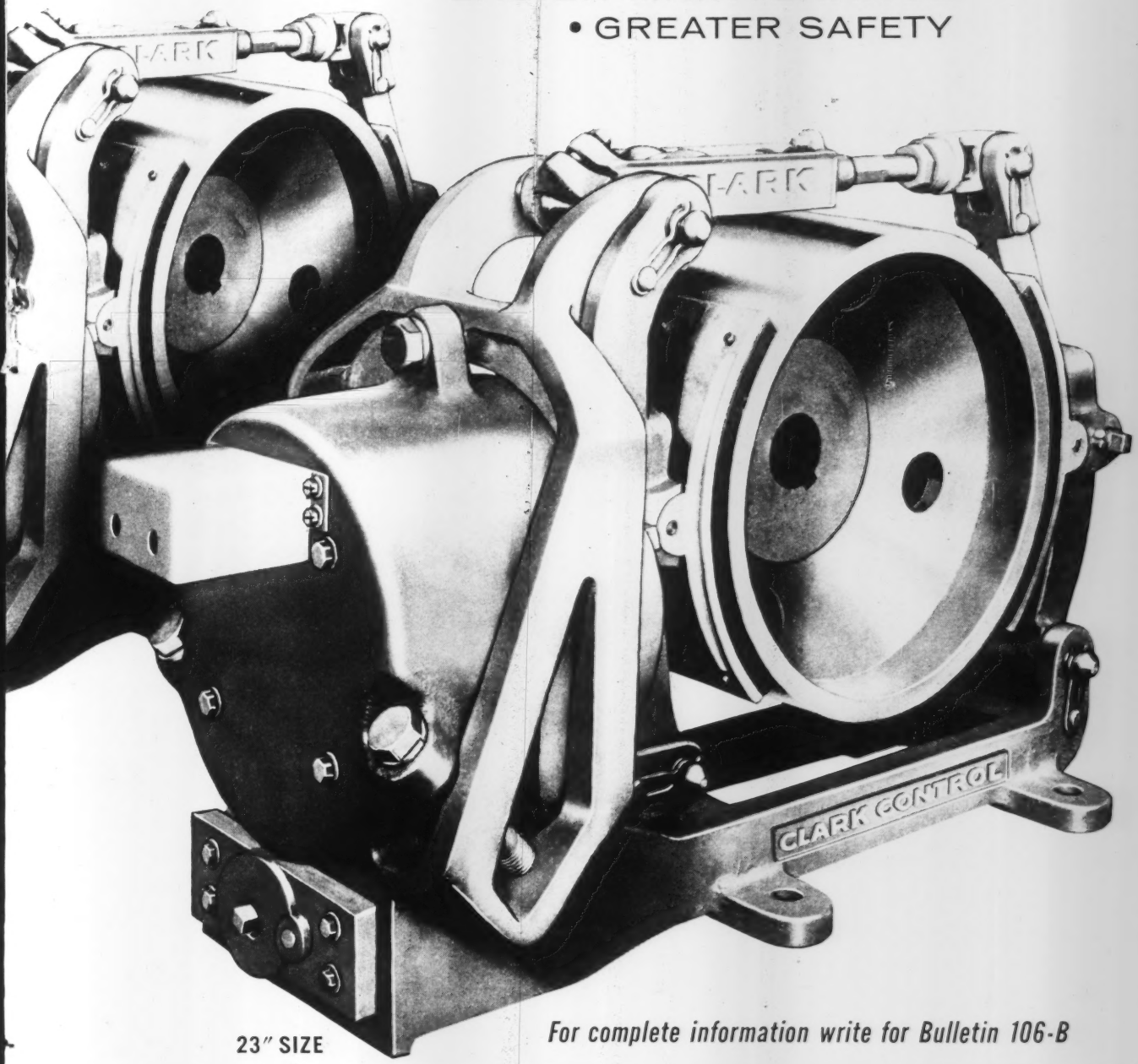
See the NEW CLARK BRAKES demonstrated at the IRON and STEEL SHOW

Cleveland Public Auditorium, September 23-26 . . . Booths 89, 90, 111, 112

LINE OF AISE-NEMA BRAKES

-with the proven
CLARK "NUT-CRACKER" PRINCIPLE

- MORE DEPENDABLE OPERATION
- EASIER MAINTENANCE
- GREATER SAFETY



23" SIZE

For complete information write for Bulletin 106-B

The **CLARK CONTROLLER** *Company*

Everything Under Control 1146 East 152nd Street • • Cleveland 10, Ohio

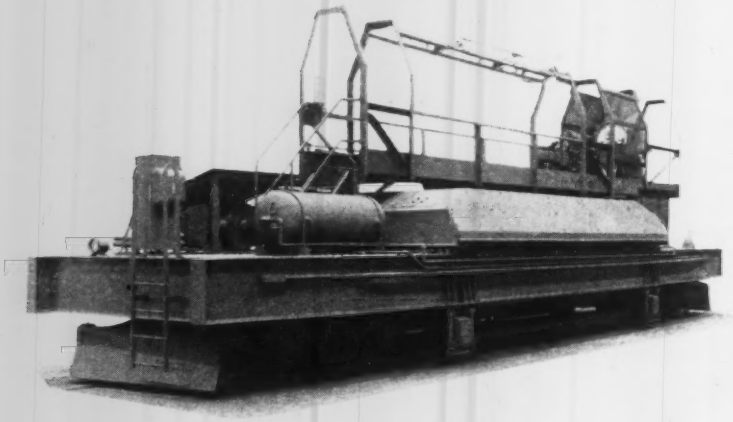
IN CANADA: CANADIAN CONTROLLERS, LIMITED • MAIN OFFICES AND PLANT, TORONTO

STOCK HOUSE OR HIGH LINE

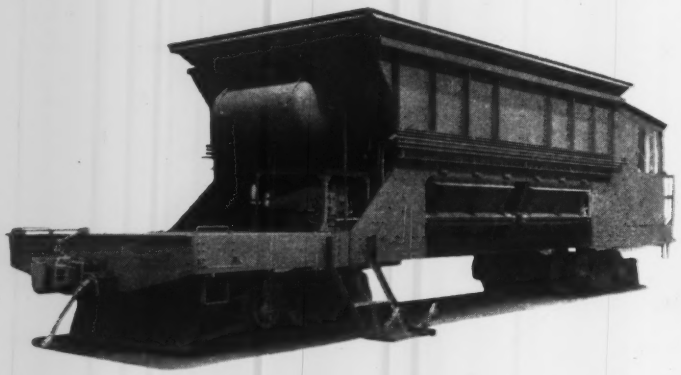
operators prefer the

DEPENDABILITY OF ATLAS CARS

These specially designed units are another example of the ruggedness of Atlas Cars. Their dependability helps maintain the most rigid furnace charging cycles.



40-TON SCALE CAR
Double Hopper Bottom Dump



75-TON ORE TRANSFER
Gable Bottom Double Side Dump

THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS
1140 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

LETTERS
TO THE EDITORS

Everyone Must Have Reprint

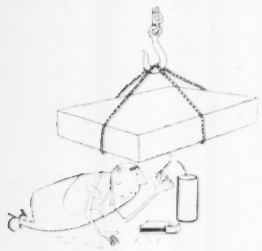
Please send us ten reprints of the article, "Productivity: How To Measure It . . . How To Boost It" (Aug. 25, Page 52). Everyone in our department must have a reprint.

Carl Davis is consulting chief industrial engineer here, and we of the industrial engineering department, who work under his direction, can fully appreciate the significance of this article and also vouch for its veracity.

The policies of Paul Edwards & Associates are definitely geared to today's thinking. You are to be congratulated for selecting this timely and instructive bit for publication.

J. E. Butler
Assistant Chief Industrial Engineer
Portsmouth Div.
Detroit Steel Corp.
Portsmouth, Ohio

Explosive Forming of Interest



I have read with a great deal of interest the article, "Explosives Form Space Age Shapes" (Aug. 25, Page 82) and should like to obtain ten copies.

Waldo W. Higgins
Vice President-Engineering
A. O. Smith Corp.
Milwaukee

• • •

This article is indeed interesting. It is one we would like to consider for possible application in our plant. We would like three copies.

John A. Pruessner
Manager, Equipment,
Buildings & Utilities Maintenance
Sandusky Foundry & Machine Co.
Sandusky, Ohio

Device Moves Sand in Stream

In your Aug. 18 Technical Outlook column, there is an item describing a Dutch invention which uses two belts to move bulk materials (like sand) in a stream. We would appreciate knowing where we can find a more complete description.

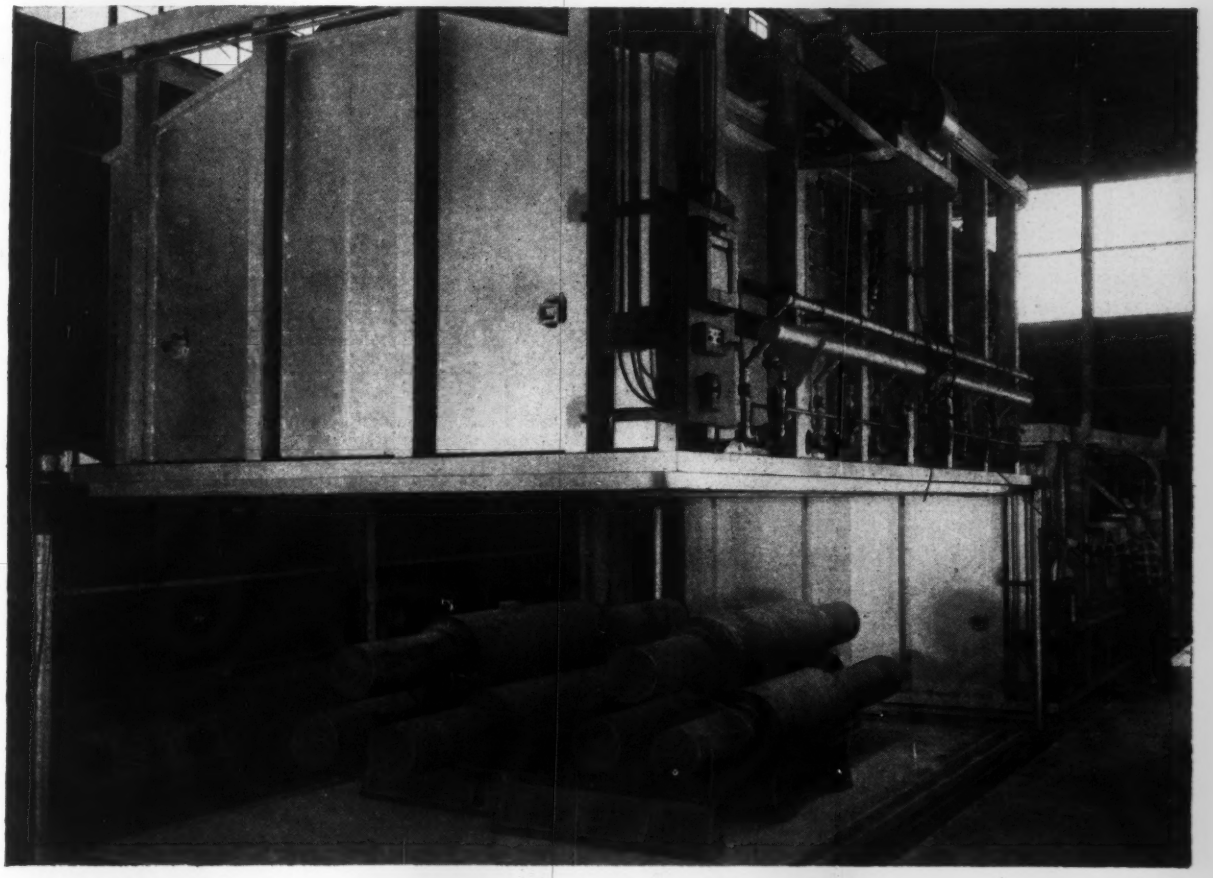
B. A. Smith
Vice President-Engineering
C. O. Bartlett & Snow Co.
Cleveland

• *The bulk materials mover, called "Jet-Conveyor," is manufactured by Dower &*

(Please turn to Page 12)

PROGRESS IN ROLL MAKING

annealing iron and steel rolls



NEW ANNEALING FURNACES

. . . for heat treating iron and steel rolls have been installed at National. These new program controlled annealing furnaces, in addition to the previously installed battery of six automatic zone control, car type heat treating furnaces, enable National Roll & Foundry Division to heat treat your iron and steel rolls to the exact degree required for long tonnage life in your stands.

These annealing furnaces are another example of what's new at National—new buildings, new equipment, new ideas—all part of the expansion and modernization program designed to give you better iron and steel rolls.

GENERAL STEEL CASTINGS CORPORATION

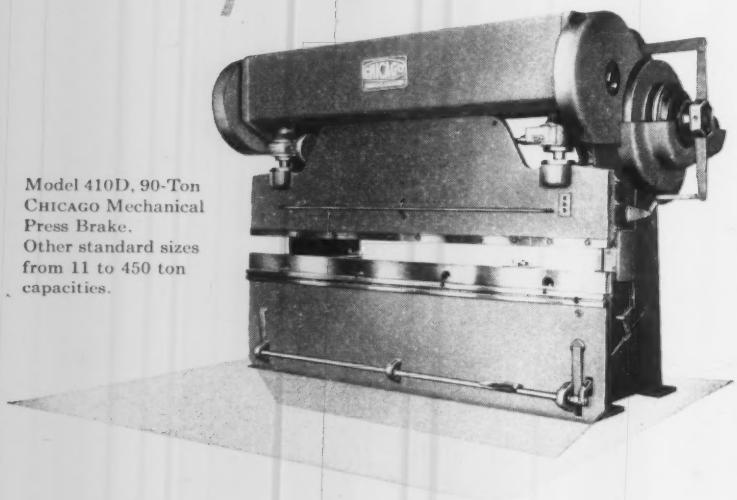
National Roll & Foundry Division

Avonmore (Westmoreland County) Pennsylvania

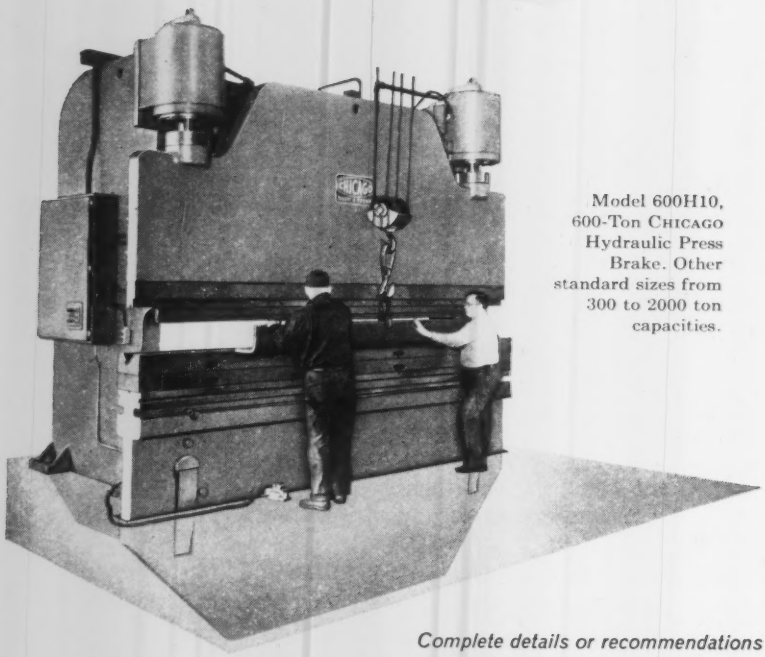
General Steel Castings Corporation: General Offices, Granite City, Ill. • Plants: Granite City, Ill.—Eddystone, Pa.—Avonmore, Pa.

CHICAGO® PRESS BRAKES

unexcelled accuracy / ***for sheet metal and plate work***



Model 410D, 90-Ton CHICAGO Mechanical Press Brake. Other standard sizes from 11 to 450 ton capacities.



Model 600H10, 600-Ton CHICAGO Hydraulic Press Brake. Other standard sizes from 300 to 2000 ton capacities.

Complete details or recommendations on any press brake work upon request

8439

Press Brakes
Press Brake Dies
Straight-Side-Type Presses
Hand and Power Bending Brakes
Special Forming Machines

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DREIS & KRUMP
MANUFACTURING CO.
7458 S. Loomis Blvd., Chicago 36, Illinois

LETTERS

(Concluded from Page 10)

Hauser, Bussum, the Netherlands, and is marketed at Rotterdam by A. S. Stokvis & Zonen N. V. Wisconsin Motor Corp., Milwaukee 46, Wis., manufactures the engine used in the device.

French Automation Works

It would be appreciated if you would send me a reprint of the article, "For Renault: Automation Opens Way to World Marts" (Aug. 18, Page 56).

Richard C. Werfel
Manager-Technical Assistance
International Div.
American Can Co.
New York

Lauds Labor Contract Data

We consider ourselves quite fortunate to have come across a reprint of your Program for Management article, "Building a Labor Contract" (May 19, Page 125). May we have 25 copies?

Our new contract will be released (with luck) in November, and an article of this sort has just the kind of background information our stewards will need.

Thanks a lot for "Building a Labor Contract." We shall look forward to more work of this caliber!

J. J. Weber
Vice President
Leeds & Northrup Employees' Union
Philadelphia

Interest in Apprentice Plan

I would appreciate a copy of the article, "More Apprentice Programs Needed" (July 7, Page 46). I found it interesting and informative.

E. F. Arrufat
Project Manager
Tool Room & Model Shops
International Business Machines Corp.
Owego, N. Y.

Key to Molybdenum Forming

In the Aug. 11 issue, there appeared the article, "Forming Molybdenum Tubing: Grain Size Is Key" (Page 82). I would like a copy.

R. P. Shimkus
Metallurgist
Technical Service
Goodyear Aircraft Corp.
Akron

Metallurgist Requests Reprints

Would it be possible to obtain two tearsheets of the article, "High Temperature Carburizing Is Practical" (Aug. 4, Page 98)? We often reproduce these articles. We would like to distribute this article to a couple of our interested personnel.

P. F. Ulmer
Chief Metallurgist
Ewart Plant
Link-Belt Co.
Indianapolis

What! Formica® laminated plastic stronger than steel?

It's a fact! Here's the proof

Strength to Weight Ratio	*Tensile Strength psi/sp.gr.*	
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Formica S-52	18,300	13,000
SAE 1020 Steel	10,000	10,000

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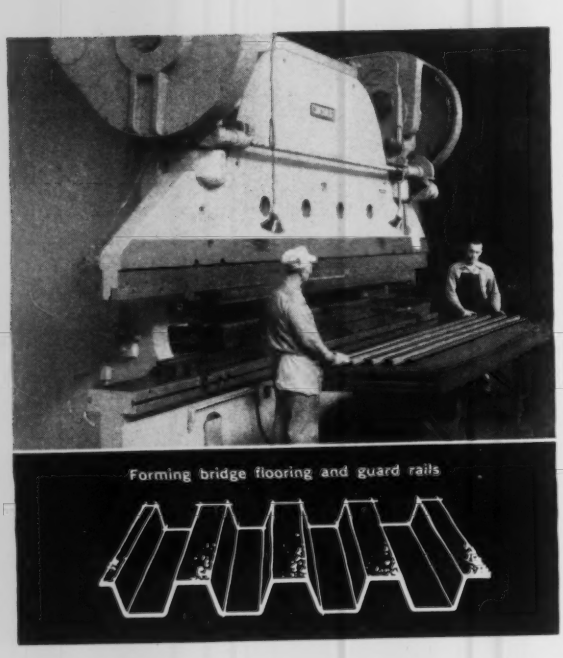
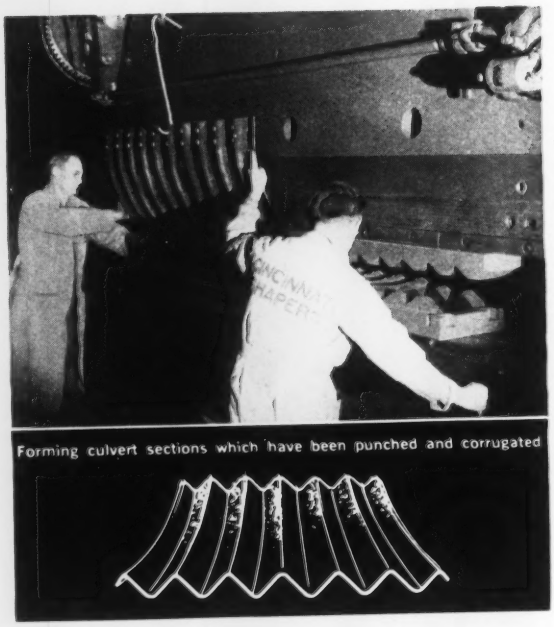
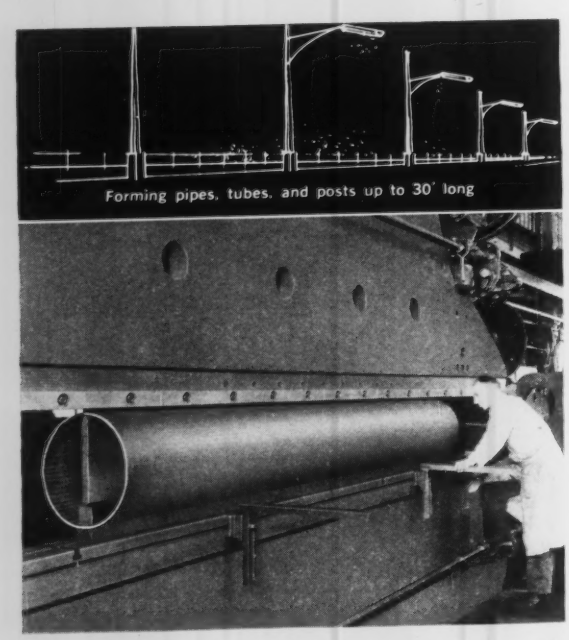


Forming bridge flooring and guard rails



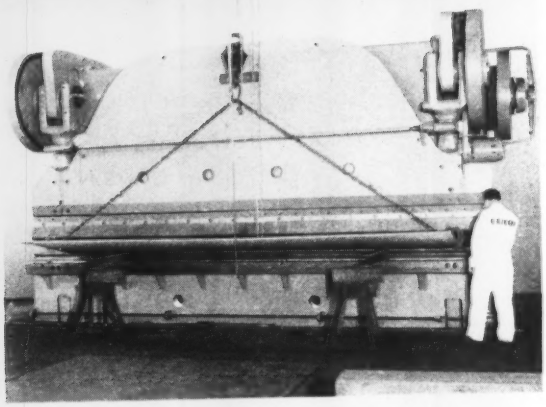
Forming culvert sections which have been punched and corrugated

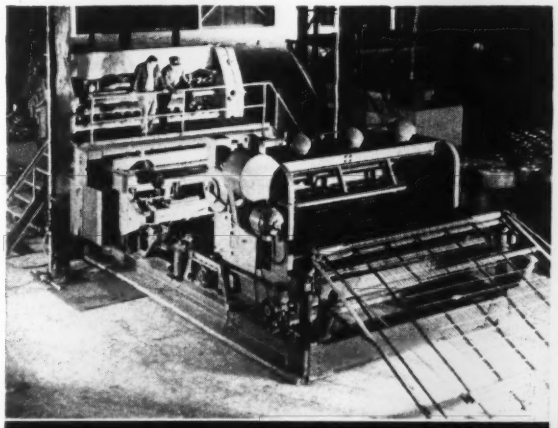
Tool up with Cincinnati® for



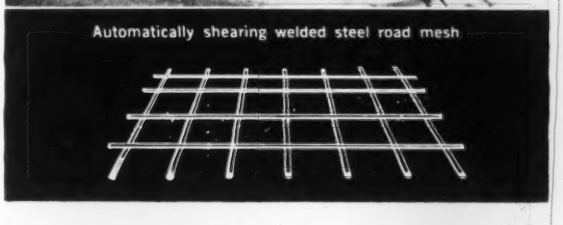
Forming pipes, tubes, and posts up to 30' long

Forming off-highway trailer sections of ½" plate





Automatically shearing welded steel road mesh



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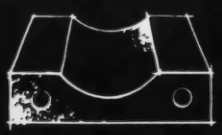
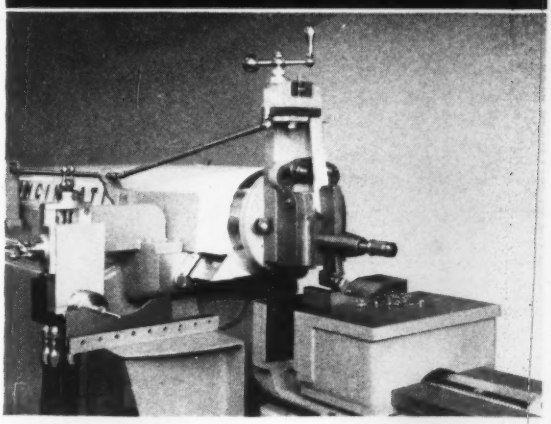
America's huge road program

Shaping bridge pillow blocks quickly, accurately





Here are just a few of the many jobs now being done profitably on Cincinnati® Shears, Press Brakes, and Shapers—helping to build America's highways.

Your share of the profits from this vast highway program will depend on your ability to supply metal components on time, in sufficient volume, to specifications, and at competitive prices. Whether you make guard rails or bridges, lampposts or culverts, curb forms or earthmovers—now is the time to measure your shear, press brake, and shaper capacity against the demand coming down the road.

Don't wait for competitive traffic. Write Department C for more data on these Cincinnati applications: Catalog B-5 on Press Brakes; Catalog S-7R on Shears; Catalog N-7 on shapers.

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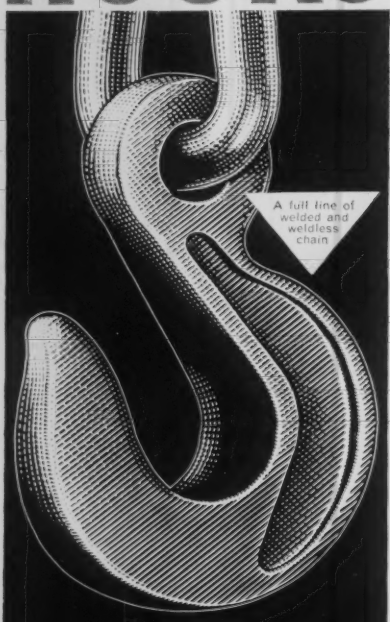

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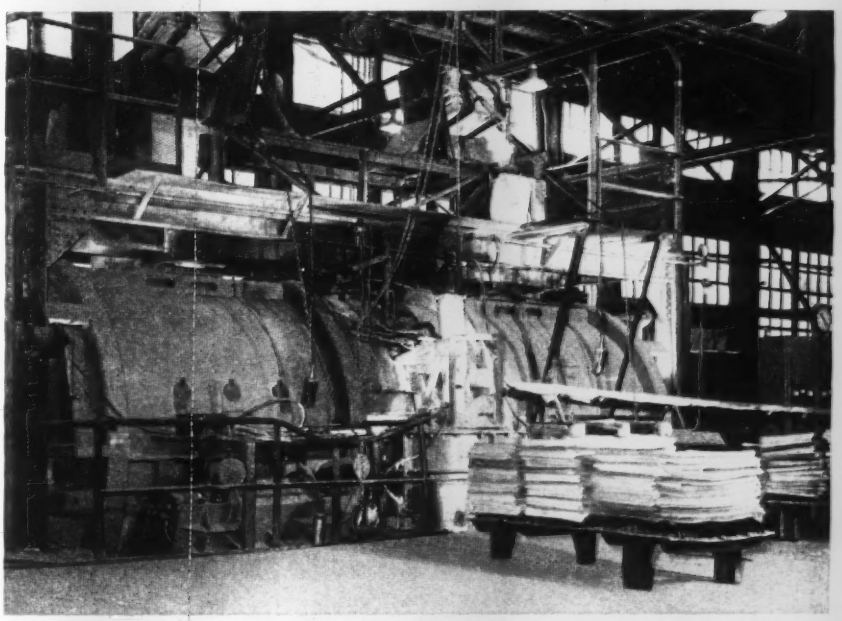
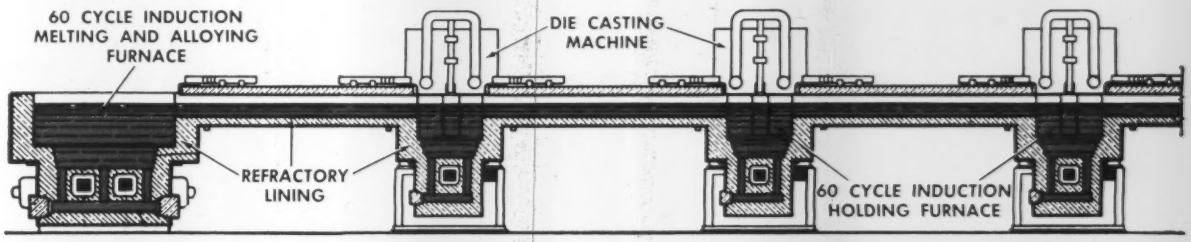


BUNKER HILL SPECIAL HIGH GRADE ZINC SLAB

PRODUCED IN THE AJAX FURNACE

High in the mountains of Idaho, the AJAX-TAMA-WYATT 800 kw induction furnace melts 235 tons of electrolytic zinc cathodes day after day. THE BUNKER HILL COMPANY, originators of Special High Grade Zinc, take pride in the purity (99.99+% Zn) of the slab poured from this 60 CYCLE INDUCTION MELTING unit. Such pure metal insures the soundness of the many zinc die castings used in our cars and appliances.

To maintain this purity when remelting the slab for die casting, hundreds of AJAX-TAMA-WYATT furnaces are used today in our busy industrial regions. The diagram below shows a modern zinc die casting line for automotive parts, using a central 60 CYCLE INDUCTION MELTING and alloying furnace, and holding furnaces at each machine. Connecting electric molten metal runways eliminate all metal transfer labor. Unexcelled metal quality, low metal losses, reliability and economy of operation are assured by using 60 CYCLE INDUCTION MELTING throughout.


60 CYCLE INDUCTION MELTING AND ALLOYING FURNACE
DIE CASTING MACHINE
REFRACTORY LINING
60 CYCLE INDUCTION HOLDING FURNACE

AJAX USA

ENGINEERING CORPORATION

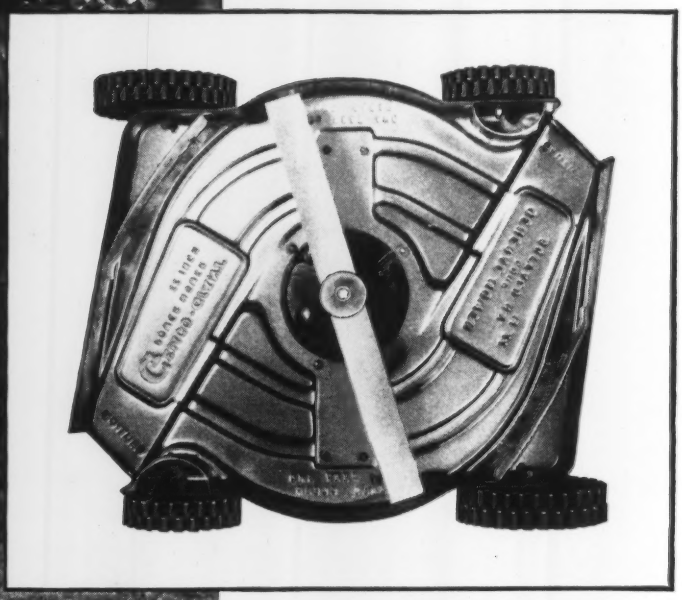
TRENTON 7, NEW JERSEY

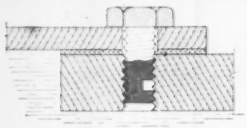
60 CYCLE INDUCTION MELTING

Associated Companies: Ajax Electrothermic Corporation Ajax Electric Company

In Gemco Power Mowers,

REPUBLIC NYLOK FASTENERS SAFEGUARD PERFORMANCE SPECIFICATIONS





REPUBLIC NYLOK FASTENERS are used extensively on Gemco Rotary, Reel, and Riding Power Lawn Mowers. Photograph above shows blade assembly securely locked to engine shaft with Nylok Cap Screw. An added advantage of Republic Nylok Bolts and Cap Screws for some applications is their ability to seal against fluid escape when wrenched tight. As shown in sketch above, Nylon pellet in bolt body blocks flow of fluid along helical thread path.

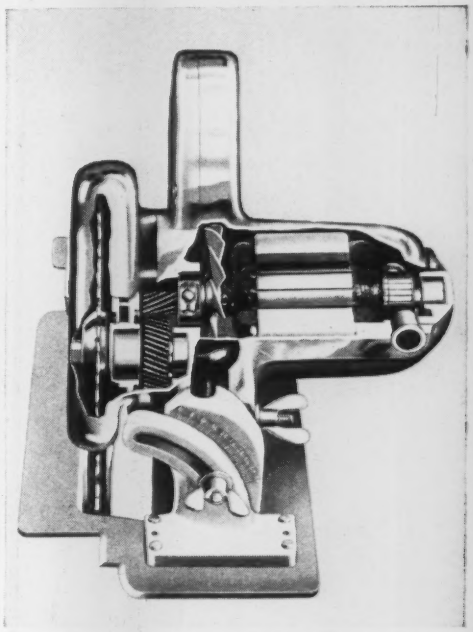
Modern Gemco Power Mowers, manufactured for General Mower Corporation, Buffalo, New York, are designed to deliver reliable, heavy-duty service with minimum of maintenance. Gemco engineers safeguard these performance specifications by using only quality materials, including Republic Nylok® Bolts and Nuts for critical assembly connections.

For example, in the Gemco Rotary Mower line, a particularly vital point is the assembly of blade to engine drive shaft. Use of a Republic Nylok Hex Head Cap Screw for this purpose assures a vibration- and shock-proof connection of maximum safety and strength. Moreover, the Nylok cap screw can be repeatedly removed and re-used to permit blade sharpening, reversal, or replacement—without loss of holding power.

The unique characteristics of Republic Nylok Bolts and Nuts suit them perfectly to many tough fastening problems. Permanent locking is provided by a nylon pellet imbedded in the fastener body which forces a tight, metal-to-metal lock between opposite mating threads. A positive grip is maintained wherever wrenching stops. Resiliency of pellet allows both adjustment and re-use.

It will pay you to explore these and other advantages of Republic Nylok Fasteners in relation to your assembly requirements. For details, contact your nearest Republic Office, or mail coupon.

ECONOMY, CORROSION-RESISTANCE, AND PAINT-HOLDING SPECIFICATIONS make Republic Electro Paintlok® Sheets ideal for this unusual product. Produced by the Self Sett Mouse Trap Company, Cleveland, Ohio, it is a fully automatic mouse trap. Mr. E. S. Coughanor, President, found Republic Electro Paintlok best by actual test for every requirement. If you want to "build a better mouse trap" in your product field, the features of Republic Electro Paintlok may work to your advantage. For details, mail coupon.



REPUBLIC COLD FINISHED ALLOY STEELS provide required reliability in gear components of this portable electric saw produced by the Black & Decker Manufacturing Company, Towson, Maryland. The strength and toughness of these steels enables Black & Decker gears to shrug off repeated shock and heavy loading—and come back for more. Republic Cold Finished Alloy Steels may provide the perfect answer to a tough application or production problem troubling you. Send coupon for further data.

MELTING POT AND FLYWHEEL SPECIFICATIONS for these castings produced by The Union Metal Manufacturing Company, Canton, Ohio, call for a pig iron with great machinability, density, and heat resistance characteristics. Over the years, the ideal answer to these requirements has been Republic Chateaugay Pig Iron. Exclusive with Republic, Chateaugay combines high carbon with unusually low phosphorus and is copper-free. Chateaugay's uniform distribution of chemical elements produces a dense grain structure which results in economical machining, plus excellent heat- and wear-resistance. For more information, mail coupon.

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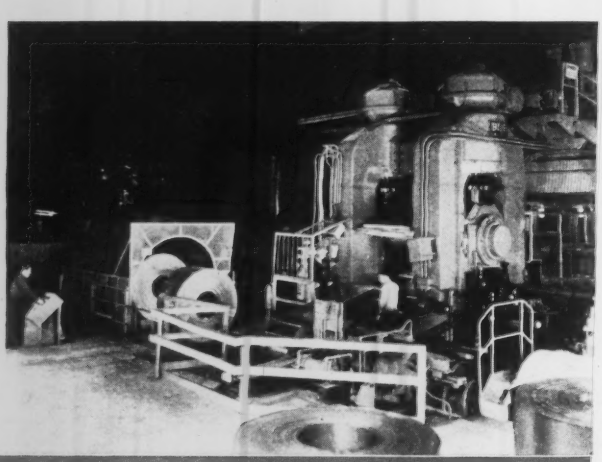

World's fastest four-stand cold reduction mill (3800 fpm—40 mph), it's also the world's most powerful (24,000 hp); features drives and controls on each roll. It is capable of rolling 70,000 tons of sheet a month, about double the capacity of the mill it replaced. The mill rolls coils weighing up to 60,000 lbs. and can produce sheets to 72" wide.

Temper Mill is also important new performer at J & L's Cleveland Works. It is 19½" and 53" by 56", has a top speed of 3500 fpm.

OPERATION "TURN-KEY" AT JONES & LAUGHLIN

From foundation to operation, Bliss assumed the role of "turn-key" contractor, supervising the construction and installation of the new cold rolling mills at the Cleveland Works. This involved—

- designing and building the world's fastest and most powerful four-stand tandem cold reducing mill
- designing and building a four-high temper mill
- supervising the modification and extension of the original cold rolling plant without disturbing operating equipment
- planning and supervising construction of the new annealing facilities for the Cleveland Works
- supervising sub-contracting of *all* equipment installation for the project.

To fulfill its contract, a staff of Bliss coordinators, amply backed by Bliss experience and J & L staffs, supervised the activities of many sub-contractors, keeping a hand in the thousand and one seemingly unrelated steps that go into the simultaneous modernizing of an old plant and the building of a new one. The assignment was considered "complete" when, in October of last year, Bliss "turned the key over" to J & L operating management.

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E. W. BLISS COMPANY, Rolling Mill Division, Salem, Ohio

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Our Band Saw Blades include a complete range of blades for general and specialized cutting. Every blade with the Nicholson trademark is designed and tested for performance perfection. You can rely on them for best results at lowest cost—just as you have always depended on files bearing our trademarks.

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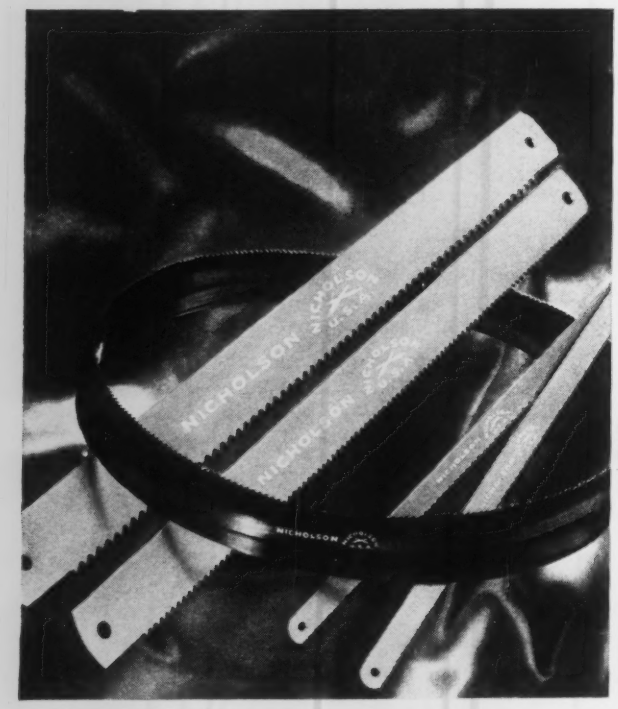
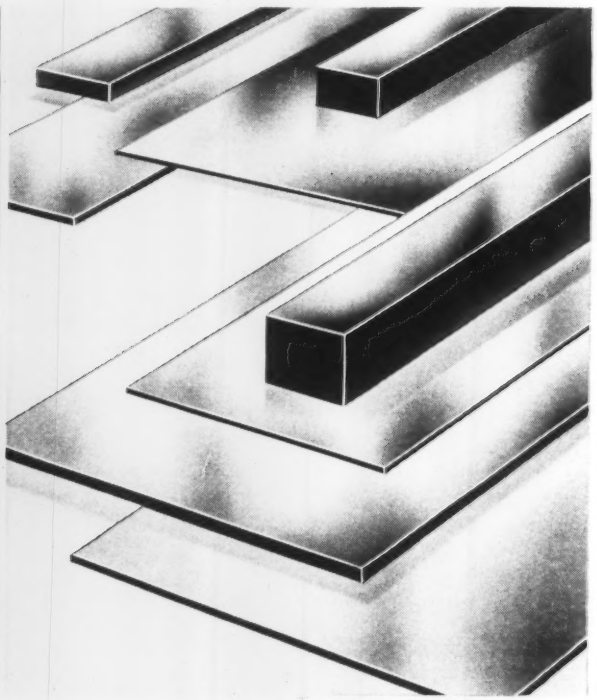
Ask your Industrial Distributor about these new Nicholson lines

Industrial Distributors provide the finest goods and services in the least possible time. Our products are sold exclusively through them.





NICHOLSON U.S.A.

NICHOLSON FILE COMPANY, PROVIDENCE, R.I.

(In Canada: Nicholson File Company of Canada Ltd., Port Hope, Ontario)

CALENDAR
OF MEETINGS

Sept. 16-18, Electronic Industries Association: Fall meeting, St. Francis Hotel, San Francisco. Association's address: 1721 DeSales St. N.W., Washington 6, D. C. Secretary: James D. Secrest.

Sept. 17-18, American Supply & Machinery Manufacturers' Association Inc.: Industrial distribution forum, Hotel Statler-Hilton, Cleveland. Association's address: 2130 Keith Bldg., Cleveland 15, Ohio. Manager: W. B. Thomas.

Sept. 17-19, National Industrial Conference Board Inc.: General marketing conference, Waldorf-Astoria Hotel, New York. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

Sept. 19, Malleable Founders Society: Fall semiannual meeting, Hotel Cleveland, Cleveland. Society's address: 1800 Union Commerce Bldg., Cleveland 14, Ohio. Executive vice president: Lowell D. Ryan.

Sept. 22-23, Steel Founders' Society of America: Fall meeting, Homestead, Hot Springs, Va. Society's address: 606 Terminal Tower, Cleveland 13, Ohio. Executive vice president: F. Kermit Donaldson.

Sept. 22-24, American Management Association: Personnel conference, Statler-Hilton Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

Sept. 22-24, Material Handling Institute Inc.: Greenbrier, White Sulphur Springs, W. Va. Institute's address: 1 Gateway Center, Pittsburgh 22, Pa. Managing director: L. West Shea.

Sept. 22-25, American Mining Congress: Metal mining and industrial minerals convention and exposition, Civic Auditorium, San Francisco. Congress' address: 1102 Ring Bldg., Washington 6, D. C. Executive vice president: Julian D. Conover.

Sept. 23-26, Association of Iron & Steel Engineers: Convention and exposition, Public Auditorium, Cleveland. Association's address: 1010 Empire Bldg., Pittsburgh 22, Pa. Managing director: T. J. Ess.

Sept. 25-27, Porcelain Enamel Institute: Annual meeting, Greenbrier, White Sulphur Springs, W. Va. Institute's address: 1145 19th St. N.W., Washington 6, D. C. Managing director: John C. Oliver.

Sept. 28-Oct. 2, Electrochemical Society Inc.: Fall meeting, Chateau Laurier Hotel, Ottawa, Ont. Society's address: 1860 Broadway, New York 23, N. Y. Secretary: Henry B. Linford.

Sept. 28-Oct. 2, Pressed Metal Institute: Annual executives meeting, Cloister, Sea Island, Ga. Institute's address: 3673 Lee Rd., Cleveland 20, Ohio. Managing director: Harold Daschner.

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Standard twist drill with spiral point geometry.

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Requires less thrust force with resulting greater drilling accuracy and less distortion of work piece.

Put this cost-reducing spiral point geometry on the twist drills in your plant with the SPIROPOINT Drill Sharpener, another precision product of Cincinnati Research. Write today for technical bulletin.

Improved Machining Through Research

CINCINNATI LATHE AND TOOL CO.

3210 Disney Street • Cincinnati 9, Ohio

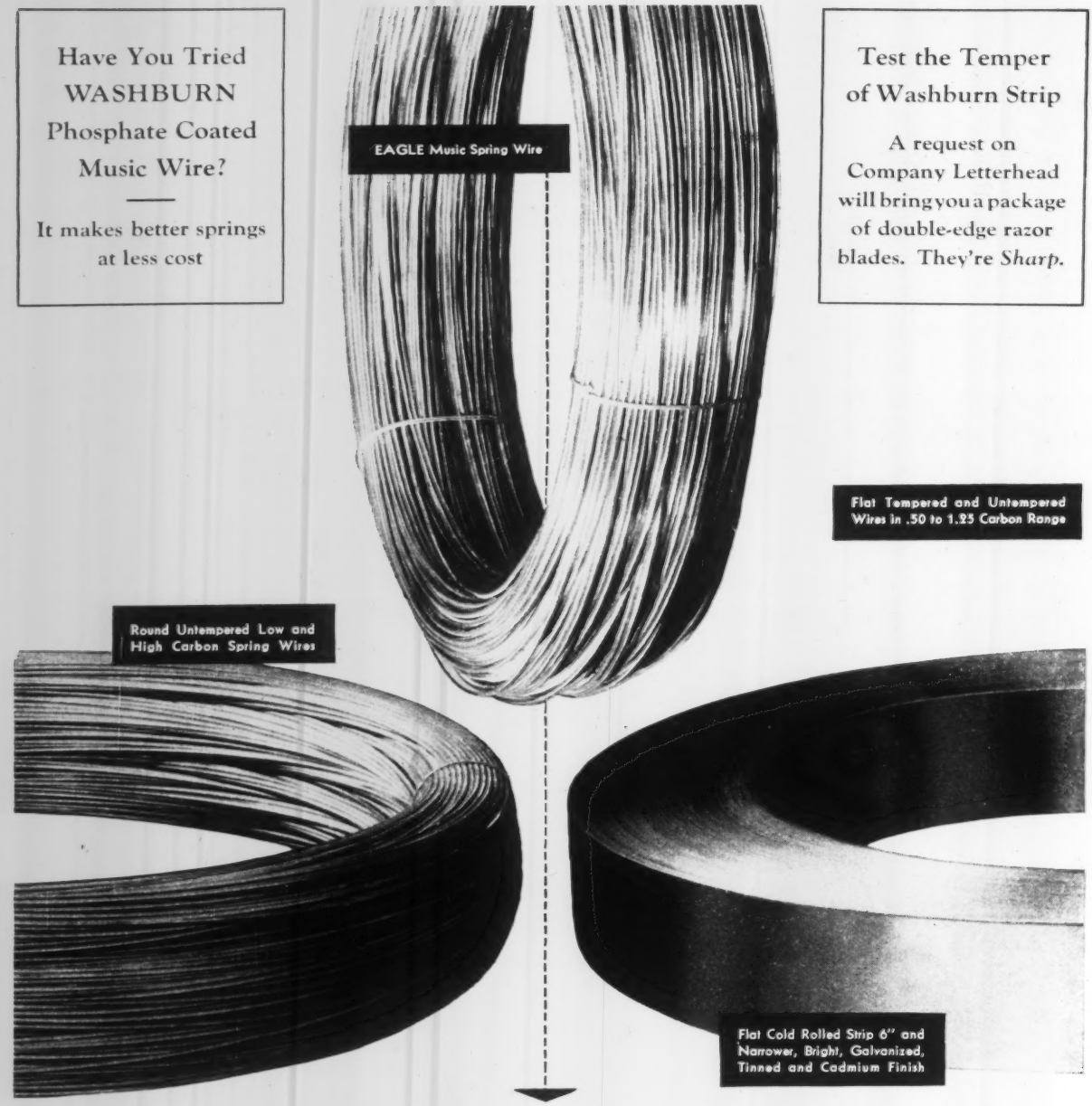
"TRAY-TOP" Lathes • "CINCINNATI" Drilling Machines
"SPIROPOINT" Drill Sharpener

Have You Tried
WASHBURN
Phosphate Coated
Music Wire?

It makes better springs
at less cost

Test the Temper
of Washburn Strip

A request on
Company Letterhead
will bring you a package
of double-edge razor
blades. They're *Sharp.*


EAGLE Music Spring Wire
Flat Tempered and Untempered Wires in .50 to 1.25 Carbon Range
Round Untempered Low and High Carbon Spring Wires
Flat Cold Rolled Strip 6" and Narrower, Bright, Galvanized, Tinned and Cadmium Finish

Here is the Washburn Wire Family
made to your specifications to insure the
Quality of YOUR Product

103 R

WASHBURN

WASHBURN WIRE COMPANY NEW YORK CITY
CLEAN, UNIFORM BILLETS - STRIP - RECTANGULAR, ROUND, FLAT RODS
TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRES

40 x 96 inch, 2 high blooming mill at the Fairless Works of the United States Steel Corporation.

from Steel Making to Steel Finishing

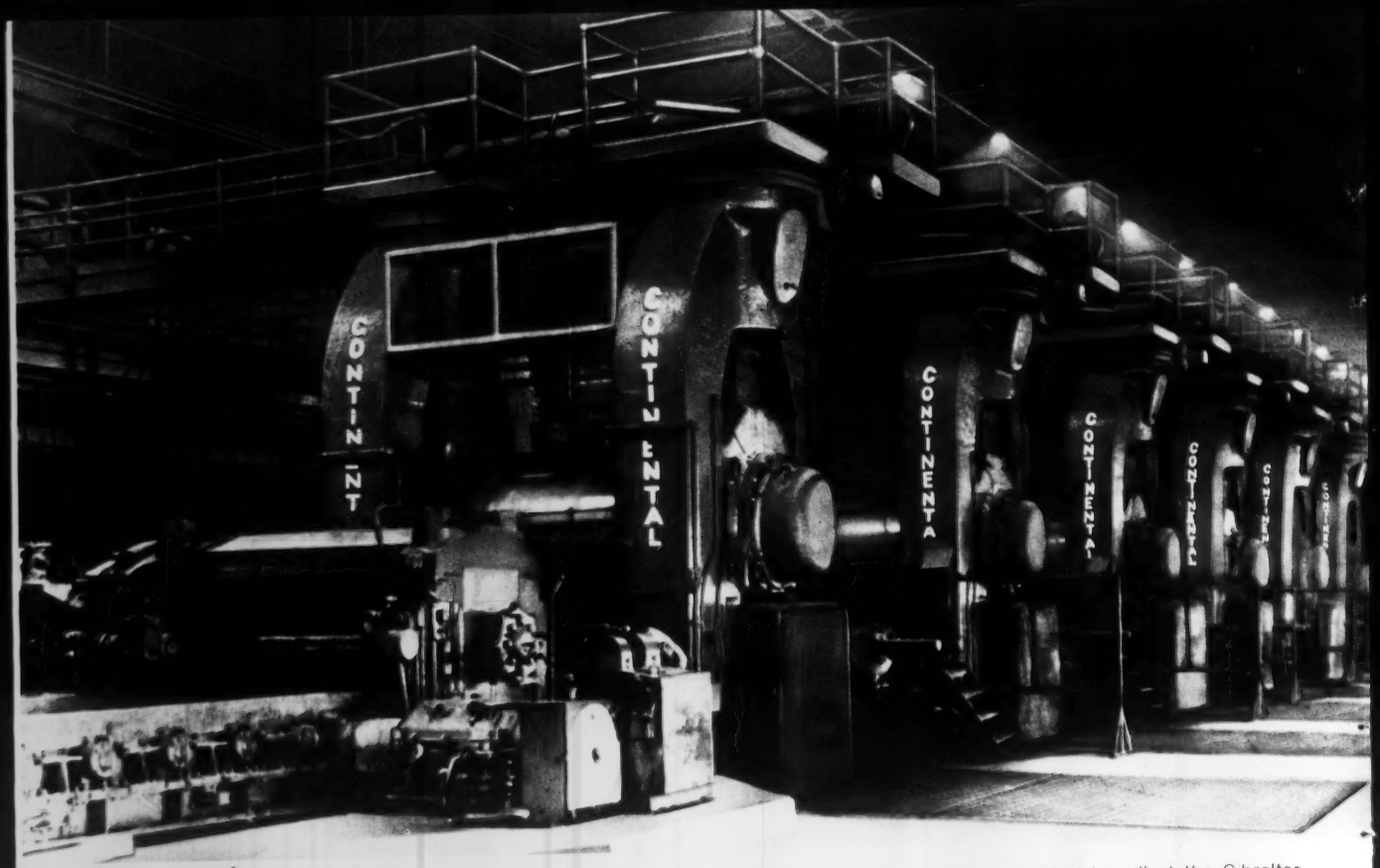
BLAW-KNOX Equipment

Serves the Steel Industry

Blaw-Knox custom-designed and built products for the steel industry range from ore buckets to complete rolling mills.

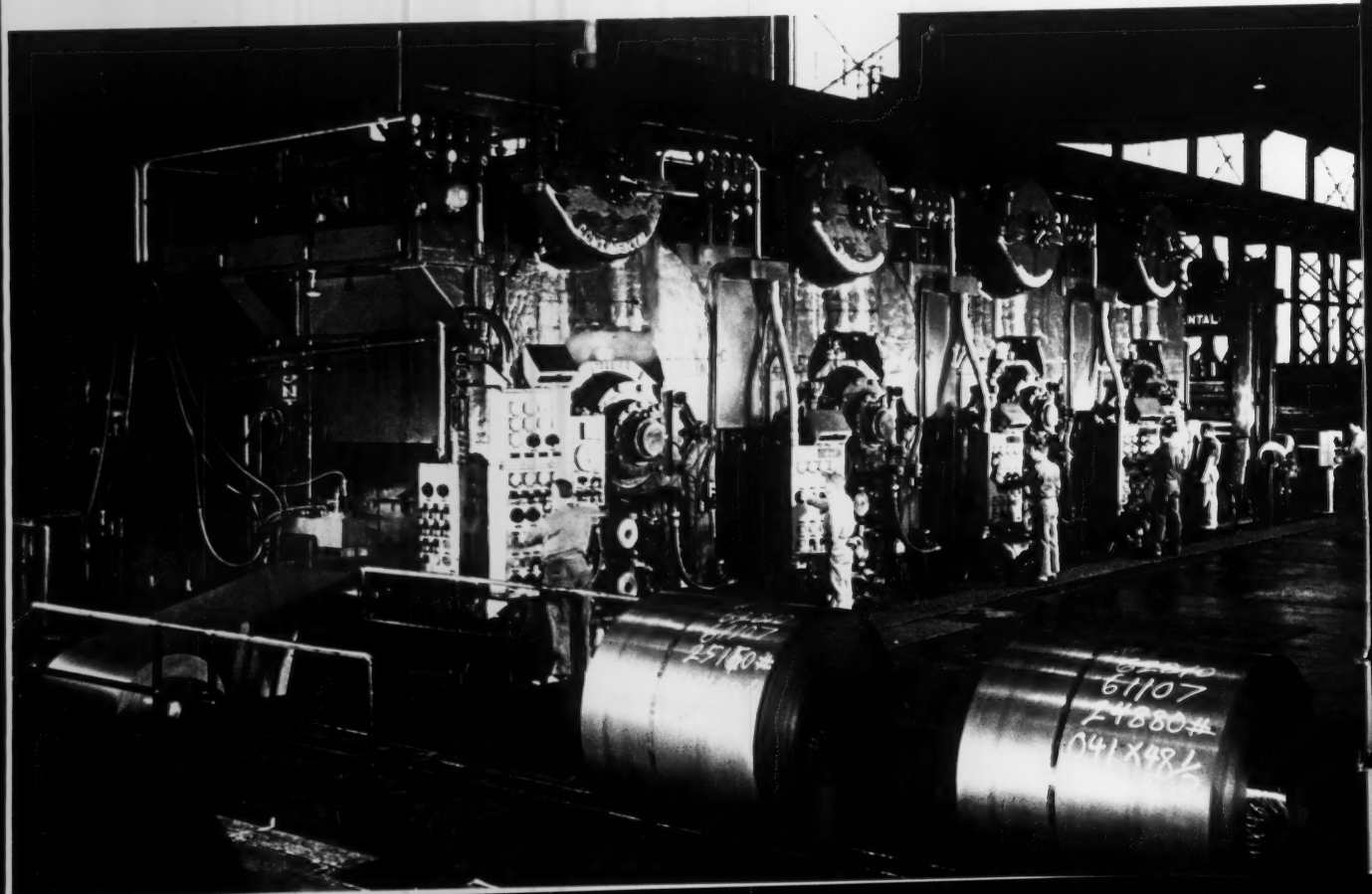
Throughout the steel industry, the Blaw-Knox mark has come to mean exceptional service and the highest standards of performance.

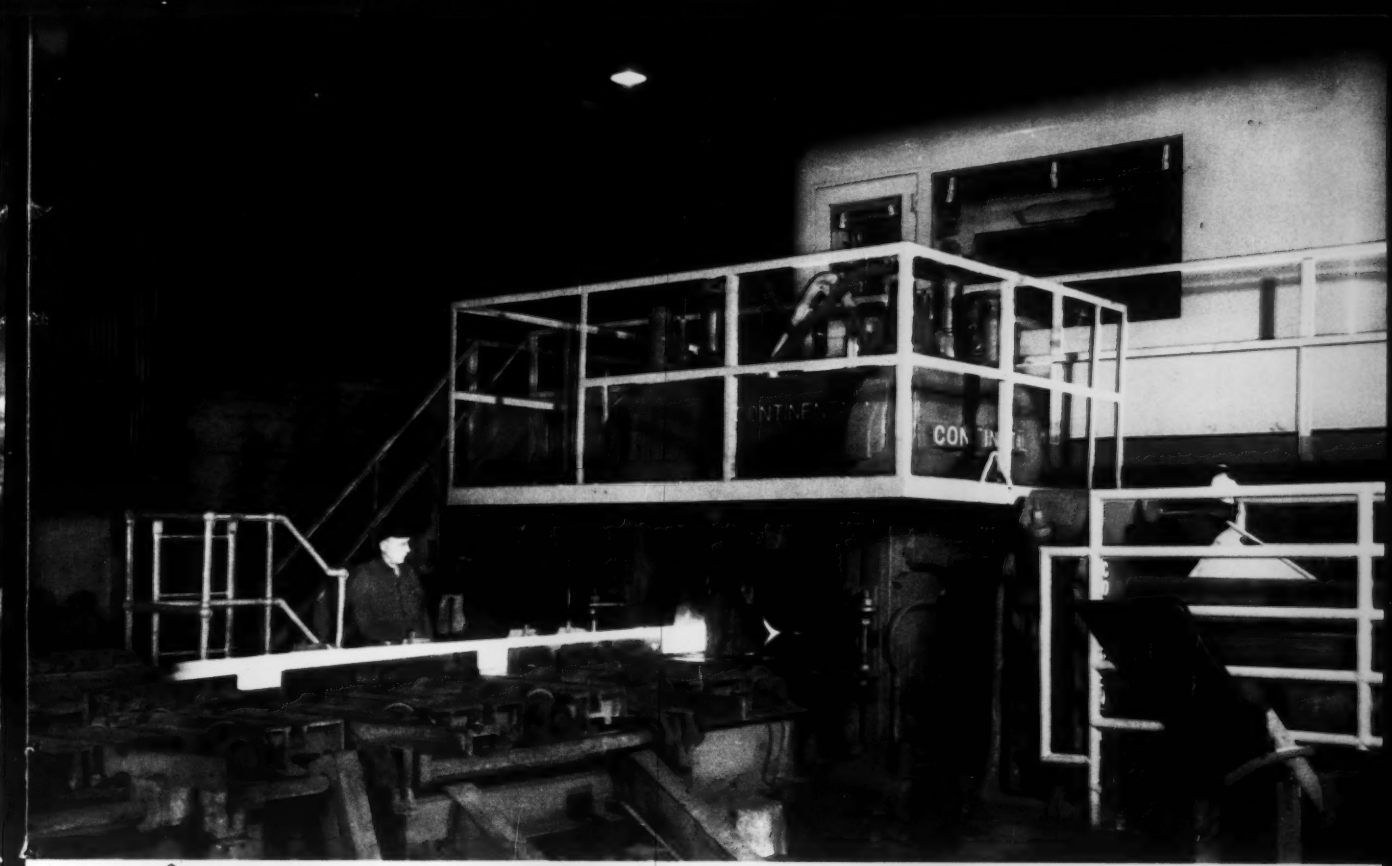
The engineering force and plant capacity behind Blaw-Knox products continues to serve the steel industry in meeting its ever increasing service requirements.



80 inch continuous hot strip mill installed at the Gary Works of the United States Steel Corporation.

60 inch, 4 stand tandem cold strip mill at the Gibraltar plant of McLouth Steel Corporation.

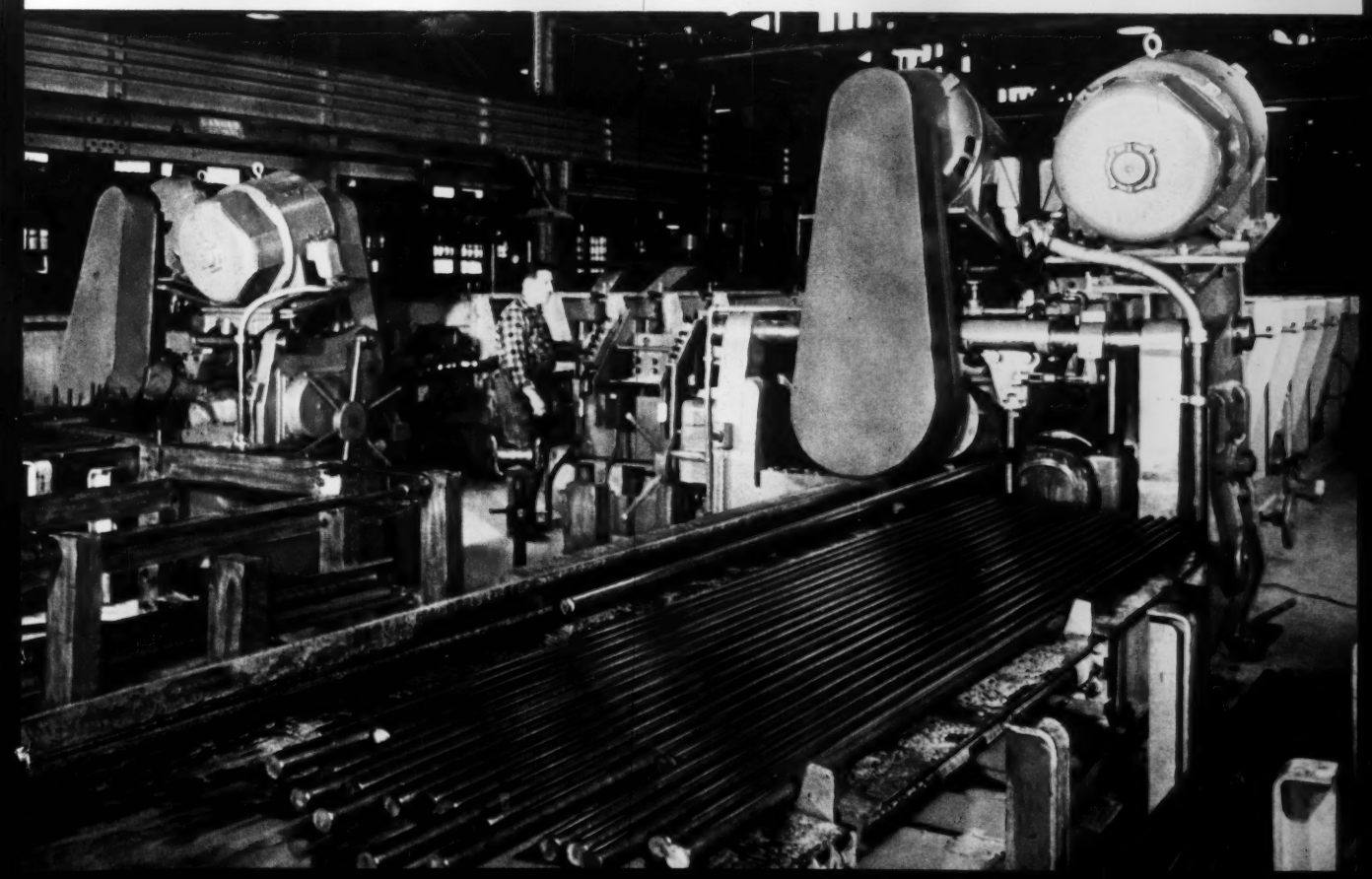




Roughing stand of Merchant Mill installed at Pollak Steel Company, Marion, Ohio.

Medart 2 and 2 straighteners on the drawing line of American Steel and Wire's Cleveland Plant.

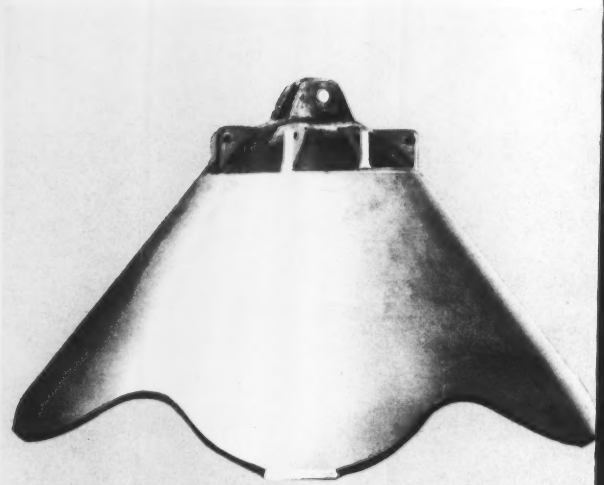
BLAW-KNOX



Mechanized open hearth accessories such as the ladle additions feeder provide safer more efficient open hearth operations. In addition, Blaw-Knox supplies water-cooled doors, frames and valves.

This serrated Blast Furnace Bell is part of a wide range of castings made in Blaw-Knox Foundries. Blaw-Knox also supplies iron, alloy iron and steel rolls.

Alloy Castings supplied by the National Alloy Division are carrying plate up to 45 feet long, 13 feet wide and two inches thick through a Drever heat treating furnace.



BLAW-KNOX

BLAW-KNOX COMPANY

Blaw-Knox Building • 300 Sixth Avenue
Pittsburgh 22, Pennsylvania

2 to 3 times Greater Thrust Capacity

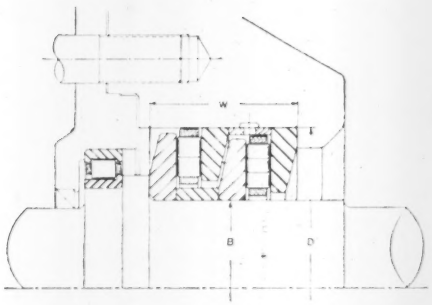
8 to 12 times Longer Life Expectancy

New ROLLWAY TANDEM THRUST BEARING

Using axial space along the shaft, rather than enlarging the housing diameter, this new Rollway tandem thrust bearing distributes the load over two or three stages of roller components. Gives 2 to 3 times more thrust capacity than conventional thrust bearings. Life expectancy is 8 to 12 times longer depending upon the number of stages.

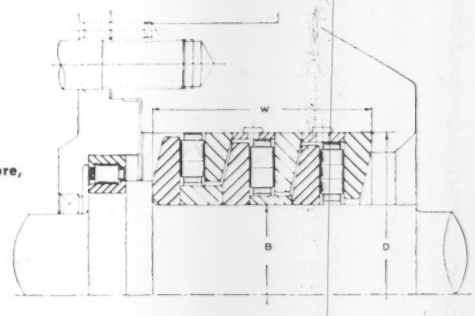
Each stage comprises a rotatable bearing plate . . . a bronze retainer with thru-hardened steel rollers . . . a compression sleeve . . . and a stationary bearing plate. The thrust load is applied to the first stage and is by-passed by each compression sleeve in turn to the remaining stage or stages.

Calculated deformation of the bearing plates distributes the load uniformly on all rollers. A greater number of rollers in the first stage carries about 60% of the load, without increasing the load per roller. Compression sleeves have cross-sectional areas proportional to the load imposed. Roller variance is held within one ten-thousandth inch.



✓ **TWO STAGE TANDEM**

22 sizes, up to 17" bore, 34" O.D., and 2,325,000 lb. capacity at 100 rpm



✓ **THREE STAGE TANDEM**

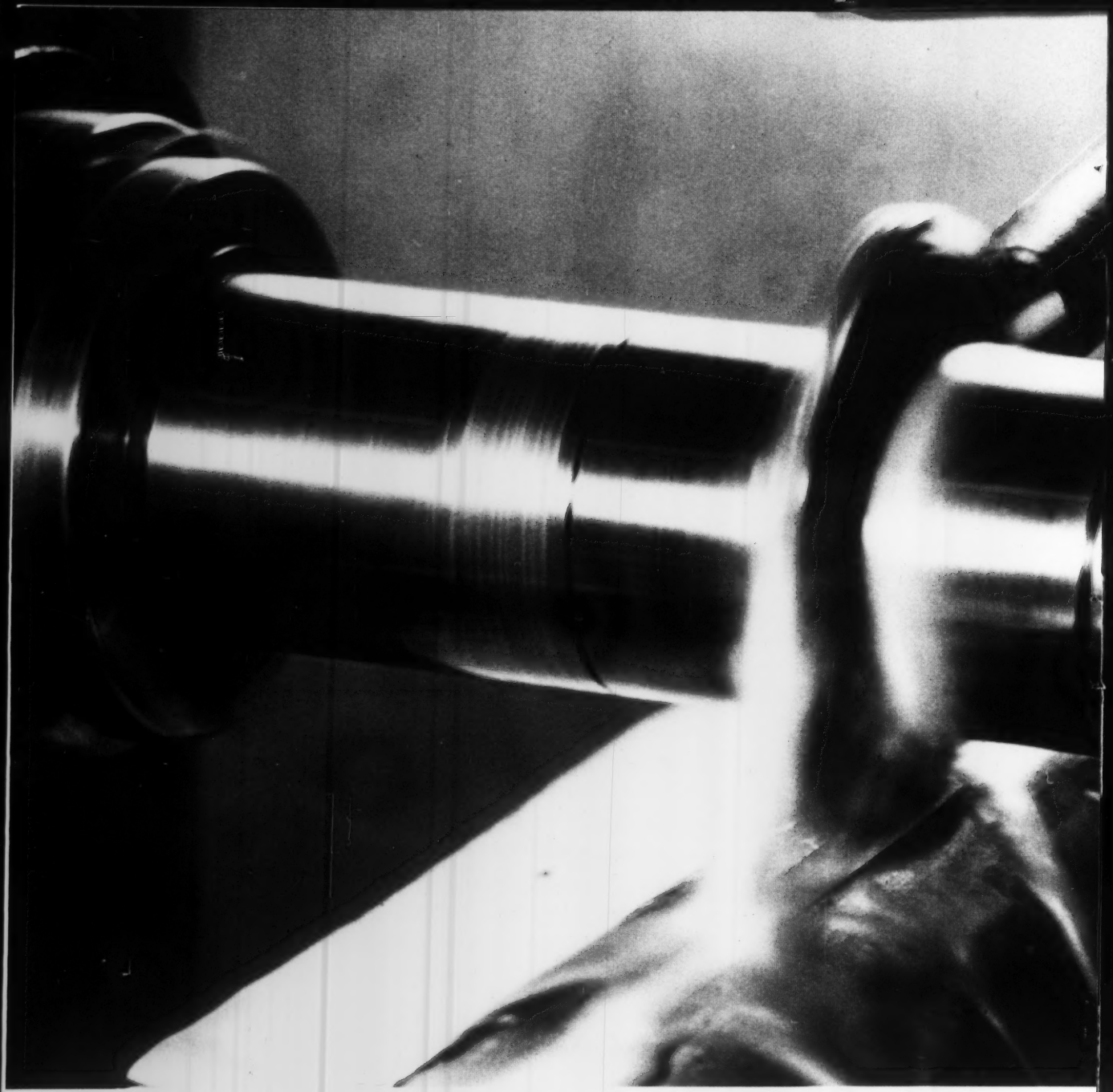
5 sizes, up to 17" bore, 34" O.D., and 3,410,000 lb. capacity at 100 rpm

SEE this remarkable bearing at the AISE Show (Booths 479-80), or write Rollway Bearing Company, Inc., 541 Seymour Street, Syracuse 4, N.Y. for catalog sheet giving complete specifications.

Tandem Thrust Bearing manufactured by Rollway Bearing Company, Inc. under U.S. Patent Number 2,374,820.

ROLLWAY®
BEARINGS
COMPLETE LINE OF RADIAL AND THRUST CYLINDRICAL ROLLER BEARINGS

ENGINEERING OFFICES: Syracuse • Chicago • Toronto • Cleveland • Seattle • San Francisco • Boston • Detroit • Pittsburgh • Houston • Philadelphia • Los Angeles



Cutting oil life jumped from 3 weeks to 3 months . . . tool life

GULF MAKES THINGS

At its Milford, Conn. plant, U.S. Electrical Motors turns out a complete line of motors ranging from ¼ to 250 hp, all precision built. For much of their close-tolerance machining they utilize emulsifying oils. Says Theodore O'Connor, Plant Superintendent:

"Until recently, we were using a soluble oil mixed in a 20-to-1 water-oil ratio to cut keyways in a variety of motor shafts. Then we switched to Gulfcut Heavy Duty Soluble Oil mixed 35-to-1. Service life of the cutting oil on this job jumped from 3 weeks to 3 months!

"The new mixture provides much better cooling. It has doubled our tool life. And we now hold closer tolerances—to plus or minus .001 on this operation."

HAVE YOU TRIED GULFCUT HEAVY DUTY SOLUBLE OIL?

Long and economical service life is only part of the story. This versatile oil has performed efficiently even when mixed in a 150-to-1 ratio! Its lubricating-cooling-pro-

U.S. ELECTRICAL MOTORS Inc. doubled tool life on this milling machine with Gulfcut Heavy Duty Soluble Oil. Keyway cut in the steel shaft is 4⅞" long; ⅝" wide; ⅜" deep. Speed 6.8 inches per minute milled. Tolerances held to ±.001. Pictured here are Theodore O'Connor, Plant Superintendent, and Peter Eaton, Gulf Sales Engineer.

doubled . . . more proof that

RUN BETTER!

tective properties meet a great variety of heavy duty machining needs, even in turning chrome-nickel steels and other tough alloys. It makes possible higher speeds, deeper cuts, finer finishes. It offers greater protection against corrosion and unusual resistance to rancidity. It will prove to you that Gulf makes things run better!

Get the full efficiency-economy story on new Gulfcut Heavy Duty Soluble Oil now. Call your Sales Engineer at your nearest Gulf office, or mail coupon.

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.
Send me illustrated bulletin on
Gulfcut Heavy Duty Soluble Oil.

Name _____

Title _____

Company _____

Address _____

City _____ Zone ____ State _____

SP-9362

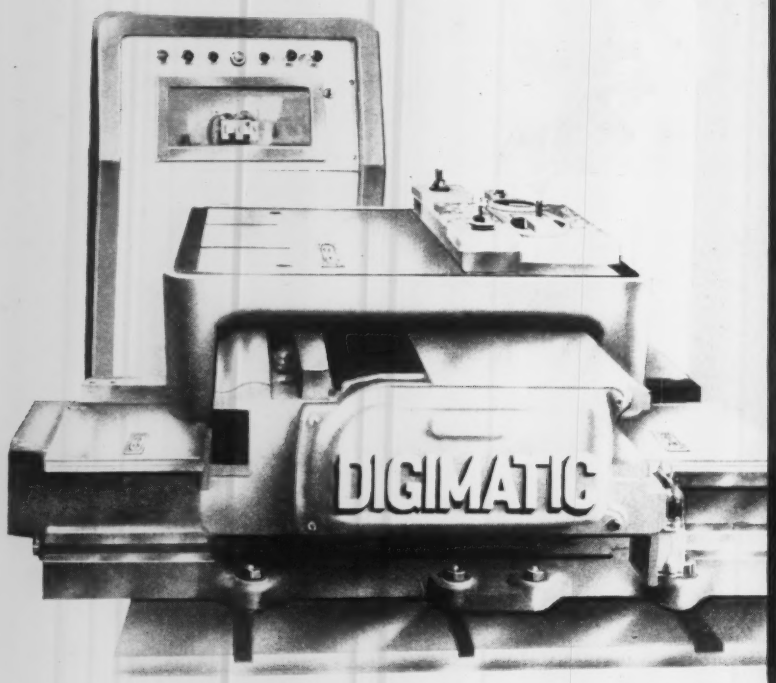
at last!
truly practical
numerical
drilling
control

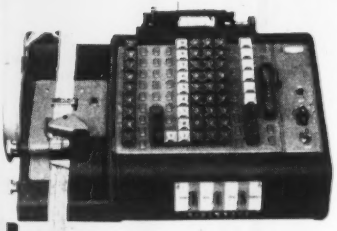
See DIGIMATIC in action at ASTE SHOW Los Angeles Booth No. 814

DIGIMATIC

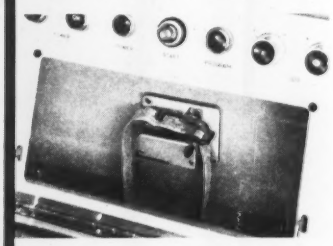
Automatic Control System for Table Positioning

- *ACCURATE*
- *ECONOMICAL*
- *ADAPTS TO EXISTING MACHINES*
- *ENABLES ONE DRILL PRESS TO DO THE WORK OF 5*

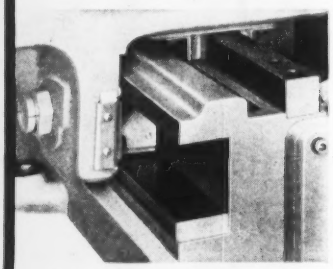




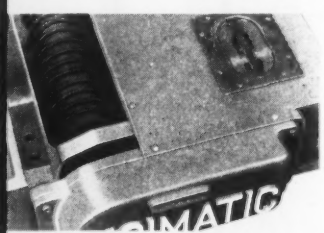
Tape Preparation Unit. Easy-to-learn keyboard operation. No special codes . . . uses simple decimal coordinates. Provides printed accuracy check.



Control Unit. Compact data storage. One foot of 1-inch tape holds all instructions needed for fifteen 2-axis positions.



Rigidly Built Table. Heavy (1200 lbs.). Replaceable hardened steel ways and rollers.



All-Enclosed Mechanism. Completely sealed against coolant and chips to maintain ±0.0002 inch accuracy.

Write for illustrated brochure giving complete details and specifications.

Now available for immediate installation. AUTOMATIC PATH CONTROL SYSTEMS ALSO AVAILABLE FOR YOUR PRESENT CONTOUR MILLING MACHINES

ECS

ELECTRONIC CONTROL SYSTEMS
DIVISION
STROMBERG-CARLSON COMPANY
A DIVISION OF GENERAL DYNAMICS CORPORATION
2231 South Barrington Avenue, Los Angeles 64, California

... Results of a Superior Beginning

The countless parts and products made from Roebling high-carbon steel spring wire and flat spring steel have one thing in common . . . their superior quality. This, of course, is related to the inherent fineness of the materials.

The variety in which Roebling offers these spring materials is equally impressive. They are available in hard drawn, hard rolled, annealed or soft, tempered or untempered. Types include zigzag and no-sag wires; upholstery and mechanical spring wires; valve spring wire; clock- and motor-type spring steels and flat spring steels of all types and description.

Whatever the type, size or characteristics you require—Roebling can fit your needs exactly. You'll find that Roebling quality means maximum production from your machines and consistent uniformity in your product.

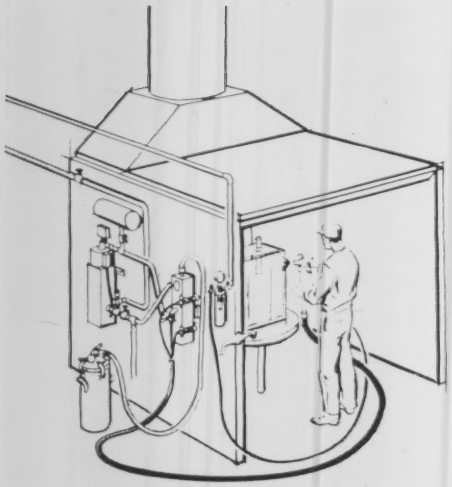
For spring wire and flat spring steel information, contact Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

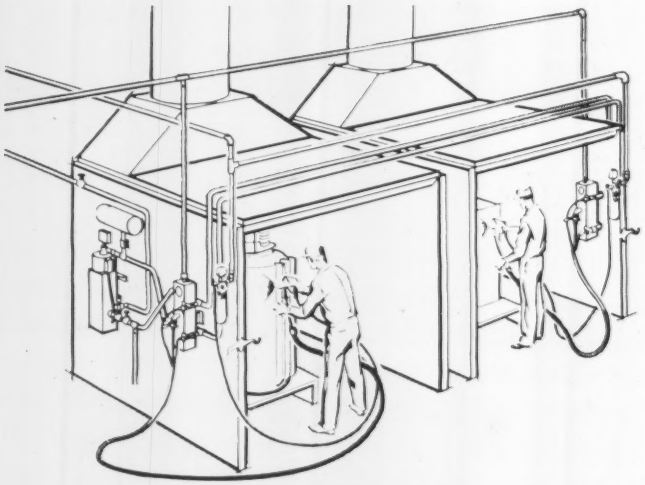
Branch Offices in Principal Cities—Subsidiary of The Colorado Fuel and Iron Corporation

Roebling... Your Product is Better for it

How DeVilbiss Hot Spray cuts painting costs



STANDARD OUTFIT . . .



ADAPTABLE TO MANY REQUIREMENTS

Heavier film builds • Less overspray
Faster drying • Easier application
Fewer rejects
Better flow-out for high gloss

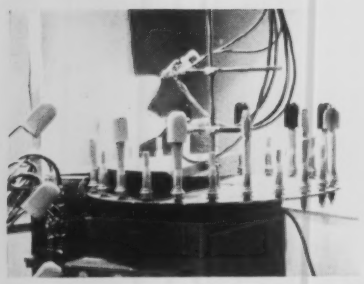
DEVILBISS

Using a DeVilbiss Paint Heater, you can get better coverage with *one* coat than you generally get with *two or more* cold-sprayed coats!

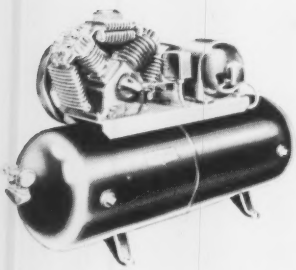
Here's why: Heat acts as a thinner to permit easier atomization and brings about new efficiency in spray painting. Even with your regular paint, heavier finishes can be applied with a savings of up to 50% in materials.

What's more, thinners are vaporized faster, drying time is decreased, finishes flow smoother and with less shrinkage. And the lower spraying pressure greatly reduces wasteful overspray.

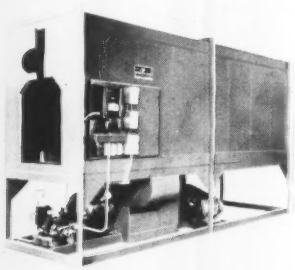
Call our nearest branch today, or write for free booklet, "New Efficiency from Hot Spray." The DeVilbiss Company, Toledo 1, Ohio.



DeVilbiss Automatic Spray Machines coat products of any size or shape quickly, economically, automatically. *Send for Series I-8000 Bulletins*



DeVilbiss Air Compressors deliver as much as 22.6% more air per power dollar. Sizes range from ½ to 15 hp. *Send for Catalog C-50*



Continuous process ovens are designed and manufactured to meet layout and production needs for baking or drying. *Send for Oven Catalog*

Automatic Positioning

Reduces

Production Costs with

BULLARD

H.B.M.

MODEL 75

The experience of George Hantscho Company, Inc., Mount Vernon, New York, builders of equipment for the printing industry, is typical of that enjoyed by users of Bullard H.B.M., Model 75.

THE PROBLEM

To bore 105 holes, from 5" to 1/2" in diameter, in both side frames of paper folding machine to support rollers, gears and folding cylinders. Some holes must be aligned vertically and others horizontally.

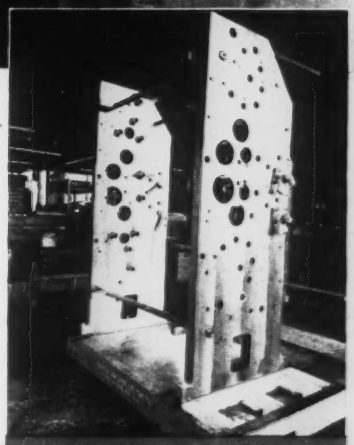
THE SOLUTION

Mount pair of side frames, 7/8" apart, on table of 4" Bullard H.B.M., Model 75, equipped with automatic table and head positioning. Bore all holes of the same size beginning with the largest and working down to the smallest.

THE ADVANTAGES

All related holes in perfect alignment — no spoilage. Less tool change-over time.

Eliminate hand measurements and templates for hole location. Accurate automatic hole location within a tolerance of ±.0004". Ease of operation from Pendant Control — less operator fatigue. Overall boring time reduced 25% over previous method.



Partially assembled side frames ready for ink rollers, gears and printing cylinders.

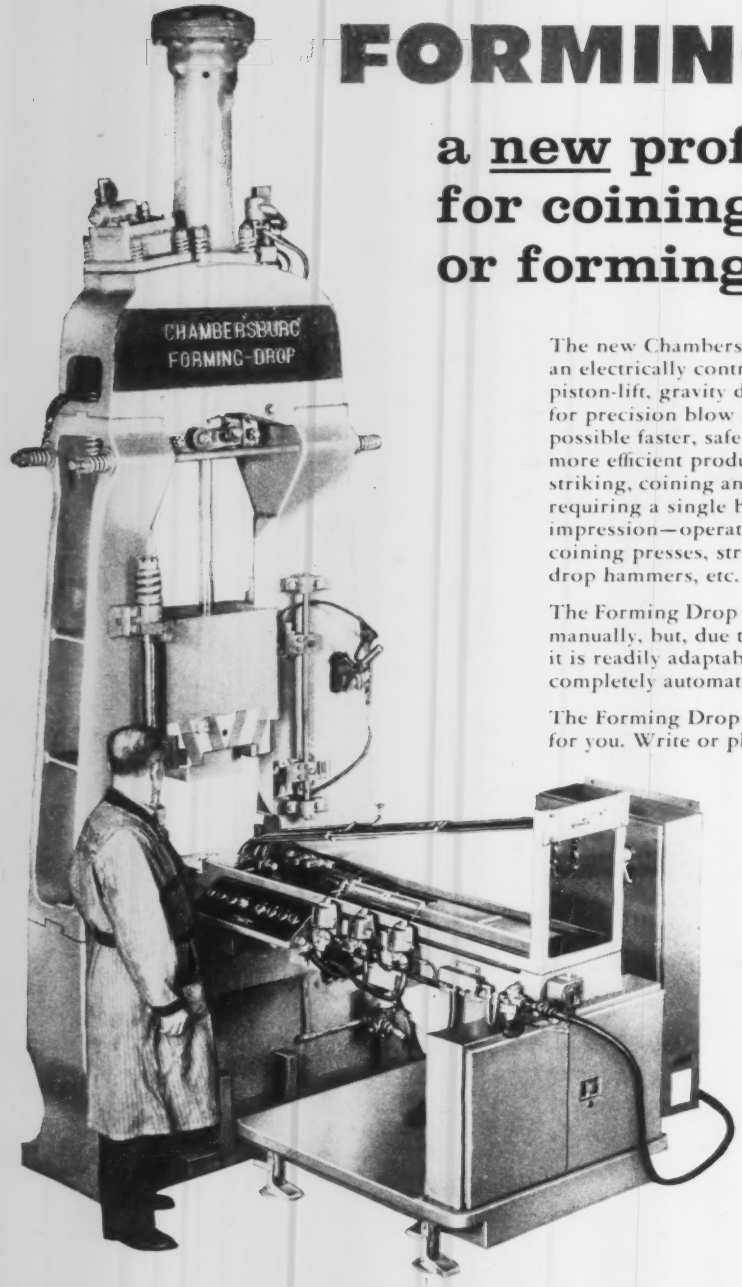
How about your boring problems? Are you applying all the advantages of a Bullard H.B.M., Model 75 to them? If not — get the full story from your nearest Bullard Sales Engineer or write

THE BULLARD COMPANY

BRIDGEPORT 9, CONNECTICUT

CHAMBERSBURG
FORMING DROP

a new profit maker for coining, embossing or forming operations

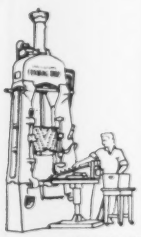


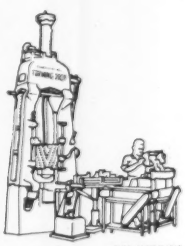
The new Chambersburg Forming Drop is an electrically controlled, air-operated, piston-lift, gravity drop hammer, designed for precision blow control. It makes possible faster, safer, almost effortless, more efficient production on forming, cold striking, coining and embossing operations requiring a single blow in a single die impression—operations common to coining presses, strap hammers, pneumatic drop hammers, etc.

The Forming Drop may be fed and operated manually, but, due to its electrical control, it is readily adaptable to semi-automatic or completely automatic operation.

The Forming Drop may hold possibilities for you. Write or phone for further details.

MANUAL


SEMI-AUTOMATIC


FULL AUTOMATIC

CHAMBERSBURG ENGINEERING COMPANY . . . . . CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS

CECO-DROP

STEAM DROP

CECOSTAMP

BOARD DROP

AUTOMATIC FORGING

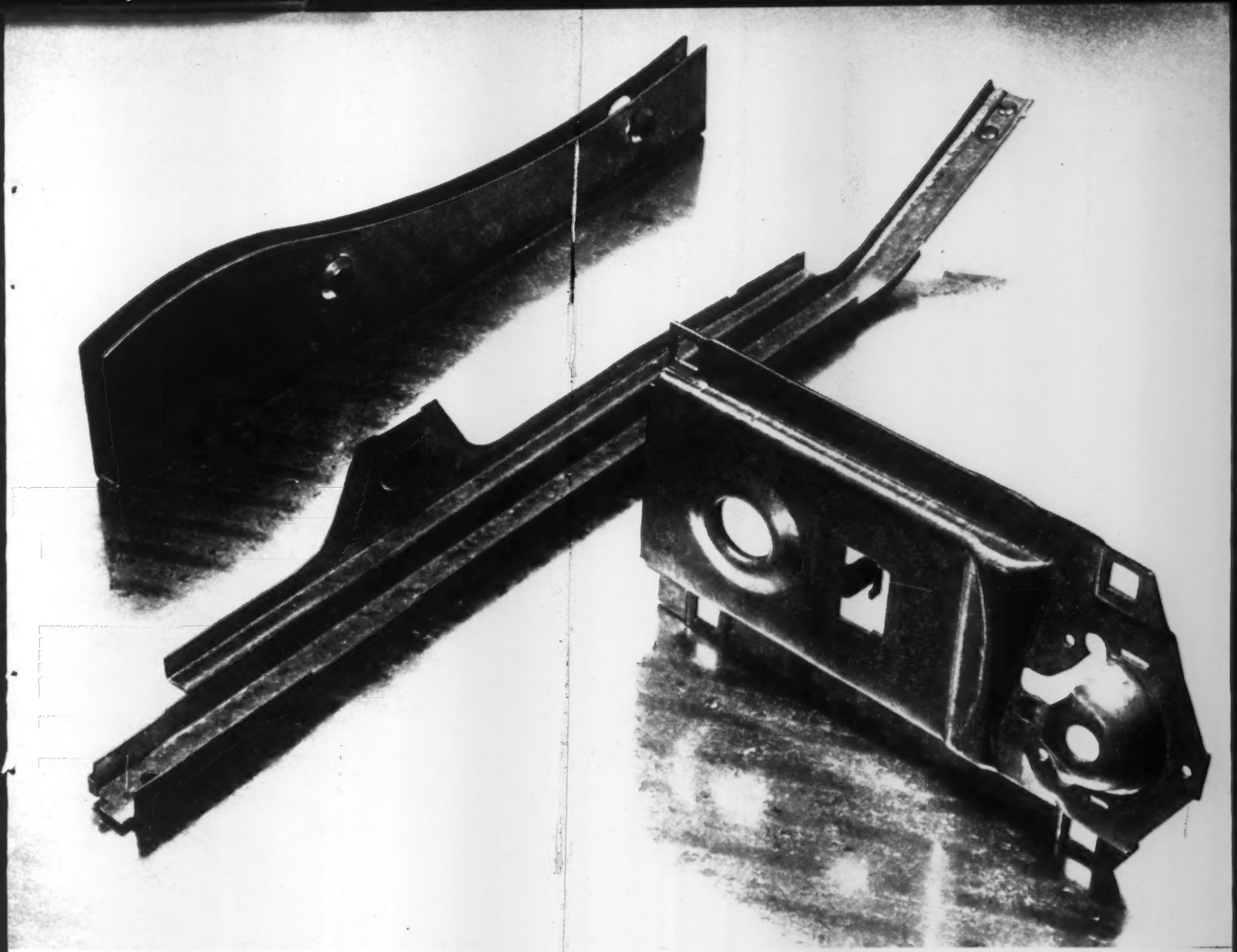
THE IMPACTER

FLAT DIE SINGLE FRAME

FLAT DIE DOUBLE FRAME

PNEUMATIC SELF-CONTAINED

TRIMMING PRESS



WHEN WEIRKOTE GOES ON THE JOB, PLATING OPERATIONS CAN GO OUT THE WINDOW.

THE PROBLEM: The close channel walls and variable stages of these steel frame parts defied economical, uniform, flawless plating.

THE SOLUTION: The manufacturer switched to Weirkote zinc-coated steel sheets. Result—uniform anti-corrosion protection for his parts, which means that the manufacturer may eliminate post-fabrication plating. Weirkote's continuous-process integrates the zinc and the steel. Even though you work Weirkote to the limit of the steel itself, it just won't flake or peel. It gives first-class protection against corrosion, eliminating inventory losses which might occur in the factory. And it gives first-class protection when out doing its work for your product.

And now, Weirkote is treated to inhibit wet storage (white oxide) stain.

Look into Weirkote zinc-coated steel sheets and the many cost savings and product advantages it can lay on your doorstep. Write for free brochure today. Weirton Steel Company, Dept. B-11, Weirton, West Virginia.

WEIRTON STEEL COMPANY

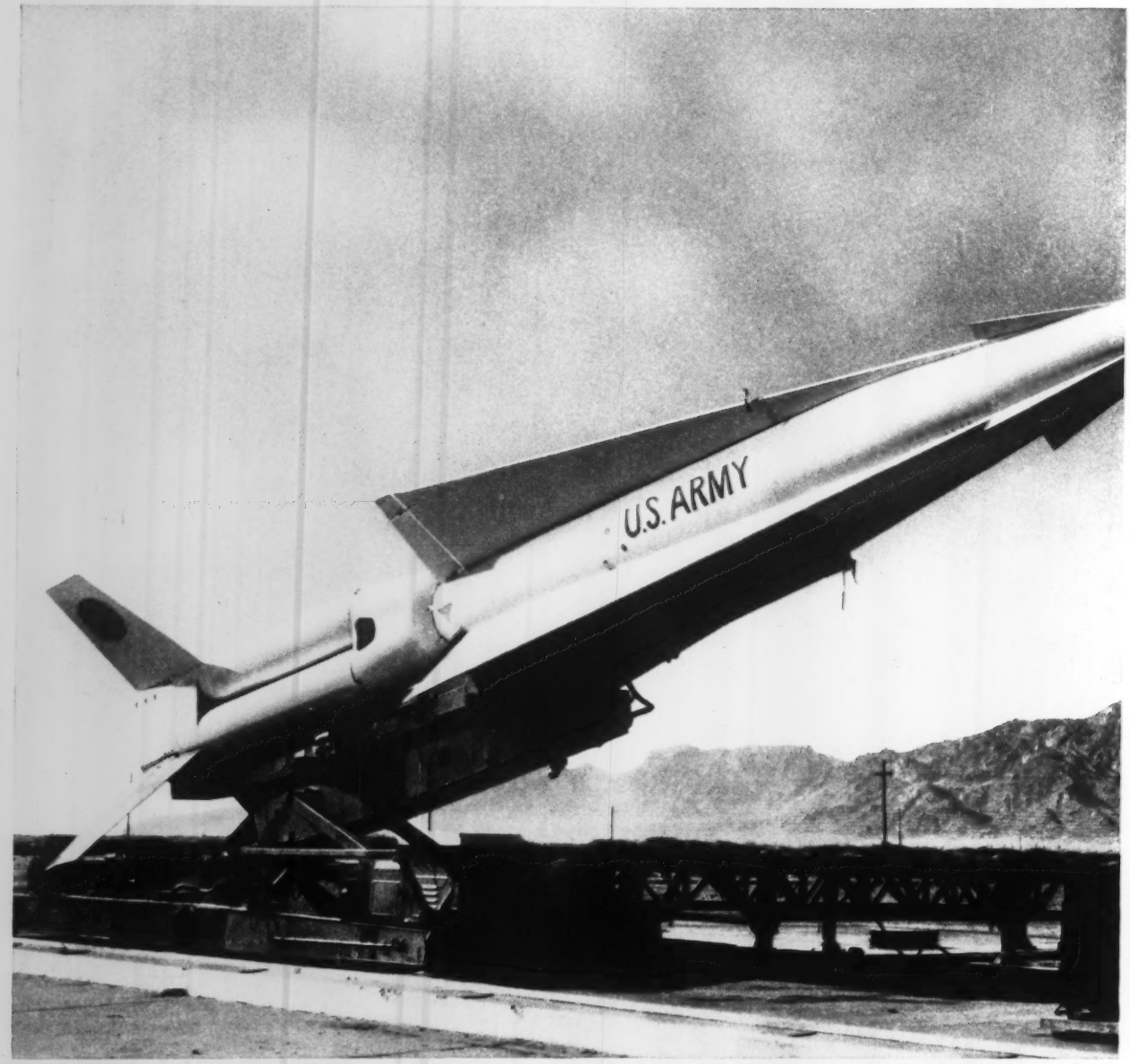
WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

When you buy from U. S. Steel

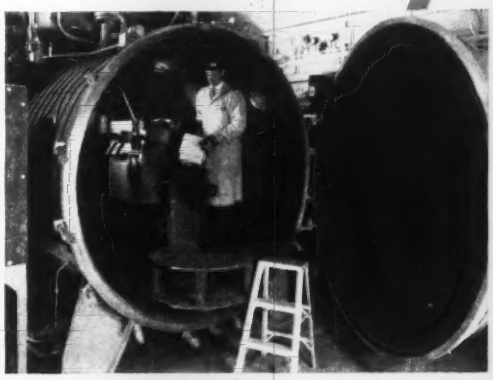


STEEL + PLUS IN ACTION: FACILITIES

Whether they are bullets or rockets, it takes steel to launch the missiles of defense. Shown here is the Douglas Aircraft produced Nike Hercules missile poised on a launcher fabricated at U. S. Steel's Consolidated Western Steel Division where production lines for assembly of the launcher and ground handling gear are set up. USS MAN-TEN and USS TRI-TEN High Strength Steels and USS "T-1" Constructional Alloy Steel are used in construction of the launcher.

American Bridge • American Steel & Wire and Cyclone Fence • Columbia-Geneva Steel • Consolidated Western Steel • National Tube • Oil Well Supply
Tennessee Coal & Iron • United States Steel Homes • United States Steel Products • United States Steel Supply and Gerrard Steel Strapping
Universal Atlas Cement • United States Steel Export Company

you get STEEL + PLUS



STEEL + PLUS IN ACTION: RESEARCH

To learn more about the effects of gases on the properties of steel, U. S. Steel researchers use this vacuum furnace to make experimental steels that are extremely low in gas content. Comparative tests are then made to evaluate any improvements obtained, and this information guides us in the development of new and better types of steel for many critical applications.

STEEL + PLUS IN ACTION: TECHNICAL ASSISTANCE

When the American Chain Division of American Chain & Cable Co. formed links from steel bars, links often had to be discarded due to irregularities in forming caused by variations in hardness. To stop the waste of time and steel, they asked us to supply a more ductile (and more expensive) annealed steel. USS Metallurgist Jim Culton looked into the problem and saw that a much less expensive, normalized steel would do the job just as well. The customer tried it and it proved to be the ideal material. Mr. Culton is shown here on the right talking with the manufacturer's plant superintendent, Mr. W. H. Paul.

We're going 100% to Stainless Steel cans
I get 26¢ per cwt. more for my milk using a bulk milk system ...and with half the labor
Now a 4 hour job takes 45 minutes with our bulk milk

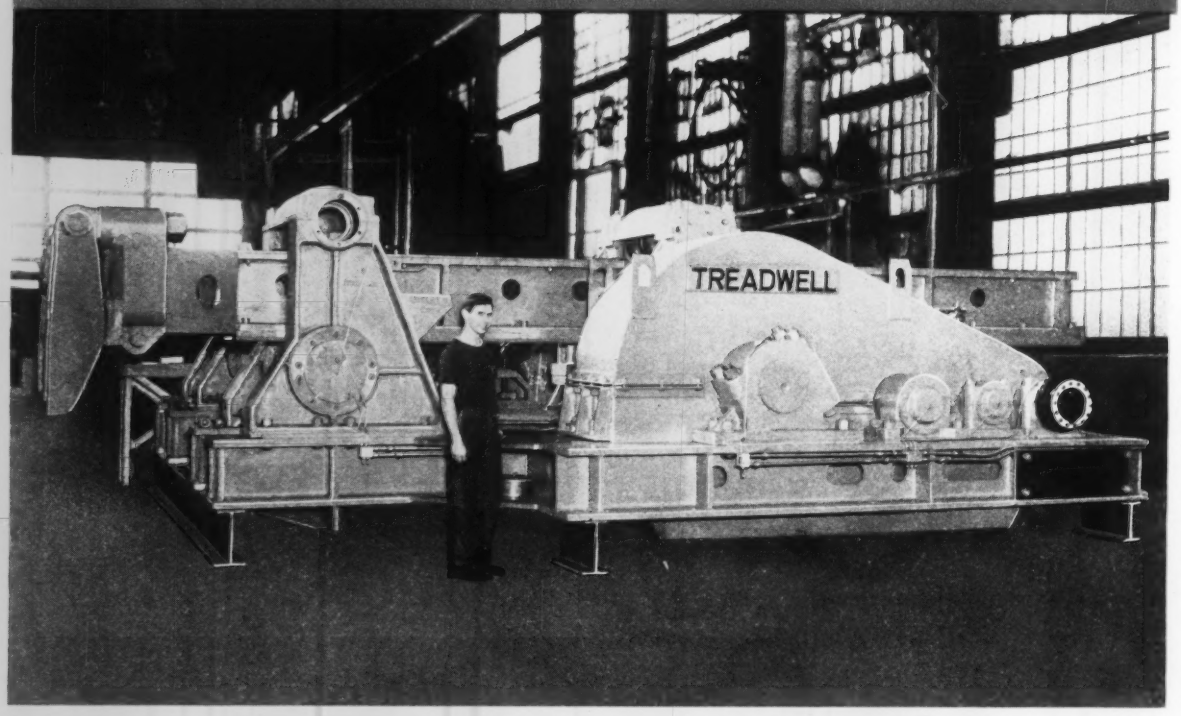
STEEL + PLUS IN ACTION: MARKETING ASSISTANCE

Today, there is a new and more efficient method of handling milk, using refrigerated bulk milk tanks, trucks and dispensers made of stainless steel. Through farm and trade magazine advertising, nationwide television, promotional literature, direct mail and dealer sales aids, U. S. Steel told the bulk milk story to farmers, dairies, restaurants and schools throughout the country, creating countless prospects for manufacturers of this type of equipment. As in this case, USS Marketing Assistance often speeds the acceptance of new ideas and new products of vital concern to our customers.

USS, "T-1," Man-Ten and Tri-Ten are registered trademarks

USS United States Steel

Treadwell



Furnace Pushers For the Steel Industry

Manufacturers of Single and Double Ram Pushing Equipment for Furnaces, Slab and Billet Transfer Beds, Runout Tables and Pushoffs.

Manipulators, Mill, etc.
Mills, Blooming & Billet
Mills, Merchant & Bar
Mills, Rod
Mills, Sheet
Mills, Strip (Cold)
Mills, Strip (Hot) & Skelp
Mills, Vertical Edging
Tables, Mill

Tables, Tilting & Lift
Tables, Transfer
Transfers

Coilers & Reels
Conveyors, Coil
Drives
Ejectors, Furnace
Gauges, Shear, Saw, etc.

Beds, Cooling
Beds, Inspection
Bumpers, Furnace
Pushers, Furnace
Repeaters
Handling Equipment (Kick-offs, Pilers, Cradles, etc.)
Steel and Iron Castings
Ni-Hard and Ductile Iron Castings

BETTER GRADE MACHINERY

Treadwell Engineering Company

EASTON, PA.

SALES AND ENGINEERING OFFICES:

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CEntral 6-9784

140 CEDAR STREET
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1015 FARMERS BANK BLDG.
PITTSBURGH 22, PA.
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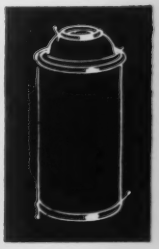
More of the good things of life come in cans

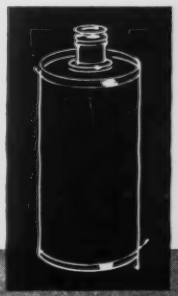
Cans made of Youngstown high-quality tin plate have brought us thousands of products to make living better and more enjoyable. Packaging manufacturers, using Youngstown tin plate, are continually developing new and improved containers that will, each year, offer us more and more of the good things of life in cans.

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio



Aerosol cans, in a wide variety of sizes, are adding pushbutton consumer convenience to dozens of products from spray paints to mothproofing.



Easy-to-fill, compact, lightweight dripless cans boost sales of heavy-duty detergents and other liquid products for the home.

When you need

a tough fan for a tough job...

INDUSTRIAL PROCESSES

BOILER GAS RECIRCULATION

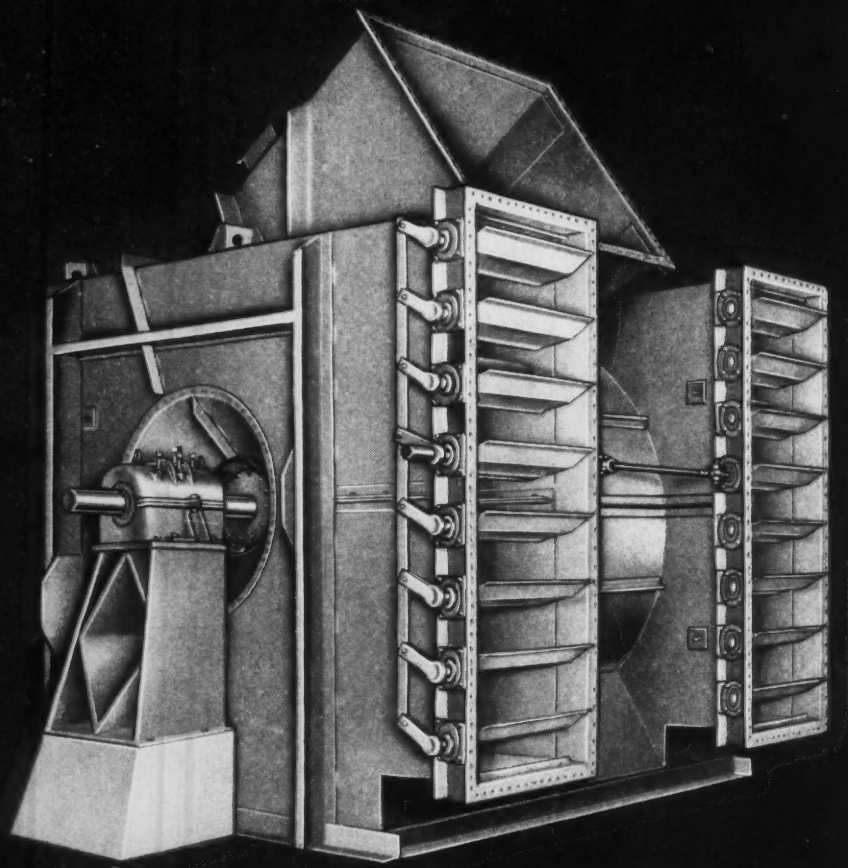
ORE SINTERING EXHAUST

ROTARY KILN EXHAUST

BLACK LIQUOR INDUCED DRAFT

WASTE HEAT INDUCED DRAFT

STEEL MILL FURNACE CIRCULATION



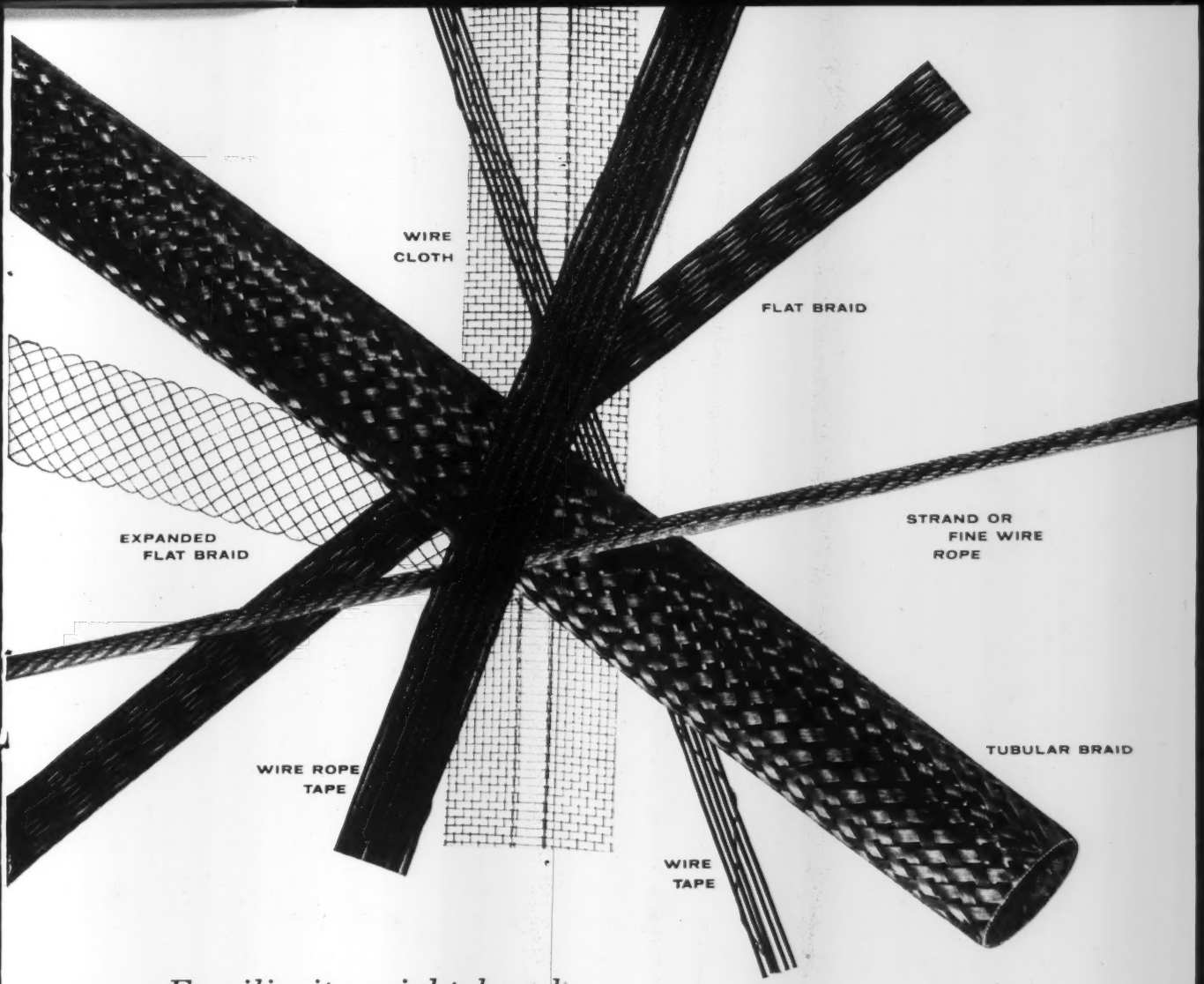
Westinghouse offers you a Heavy-Duty Fan... the right type...the right size...the right blading

Remember this: American Industry invests more in Westinghouse Heavy-Duty Fans than in any other.

Call your nearest Sturtevant Division Sales Engineer, or write Westinghouse Electric Corporation, Dept. J-11, Hyde Park, Boston 36, Massachusetts.

J-80662

YOU CAN BE SURE...IF IT'S Westinghouse



Familiarity might breed

NEW PRODUCT IDEAS!

The wire fabrications shown here, highly developed specialties of National-Standard, are available in many types and sizes. Each can be produced in any metal that can be drawn into wire.

These materials are used in numerous products today for many different reasons . . . for strengthening, stiffening, protection, safety, decoration, filtering, screening, heat or electrical conductivity, grounding, etc., etc.

Can one of these materials meet a present or new product requirement of yours? You'll never find an organization more cooperative or better qualified to help you fully explore any such ideas. Just get in touch with National-Standard, Niles, Michigan.

NATIONAL STANDARD

DIVISIONS: NATIONAL-STANDARD, Niles, Mich.; *tire wire, stainless, music spring and plated wires, flat and tubular braid and wire cord* **WORCESTER WIRE WORKS, Worcester, Mass.;** *music spring, stainless and plated wires, high and low carbon specialties* • **REYNOLDS WIRE, Dixon, Ill.;** *industrial wire cloth* **WAGNER LITHO MACHINERY, Secaucus, N. J.;** *metal decorating equipment* • **ATHENIA STEEL, Clifton, N. J.;** *flat, high carbon spring steels*

H-25 { . . . geared for penetration . . . geared for transportation

This new "PAYLOADER" has more hustle than you've ever seen in a tractor-shovel. It's got everything to turn out big production all day long with the least operator effort and is the only machine in its class with *complete* power-shift transmission and power-steer. The carry capacity of 2,500 lbs. is 25% greater than has ever before been available in a tractor-shovel of its size and maneuverability, yet it easily goes in and out of boxcars with narrow 6-foot doors.

Another valuable and exclusive feature is the power-transfer differential that makes traction more effective and reliable at all times because the wheel with the better grip automatically gets the most power.

The H-25 is *full* of other plus features that mean more production, less maintenance and longer life: closed hydraulic system, wet-sleeve overhead valve engine, triple air cleaners, full-shift fuel capacity, 4,500 lbs. of bucket breakout force and 40° bucket tip-back, to mention only a few.

Your Hough Distributor wants to show you how the greater capacity, speed and handling ease of the H-25 can cut your bulk-handling costs. Ask him about Hough Purchase and Lease Plans too.

Modern Materials Handling Equipment

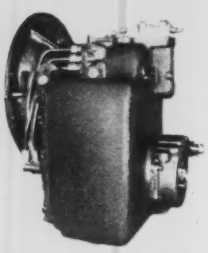
THE FRANK G. HOUGH CO.

LIBERTYVILLE, ILLINOIS

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

SAY "HUFF"

the only COMPLETE power-shift transmission



. . . having two speed ranges forward and two in reverse — the low range for digging power and close maneuvering—the high range for fast, economical travel in either direction.

All shifting, forward or reverse, is an instant finger-tip action with no need to stop between range shifts. The torque-converter is carefully matched with the transmission and is the more costly and more efficient two-phase type that automatically becomes a thrifty fluid drive when torque multiplication is not needed. Transmission and converter also keep comfortably cool because their oil is radiator-cooled.

THE FRANK G. HOUGH CO.

876 Sunnyside Ave., Libertyville, Ill.

Send full data on the H-25 PAYLOADER.

Name .....

Title .....

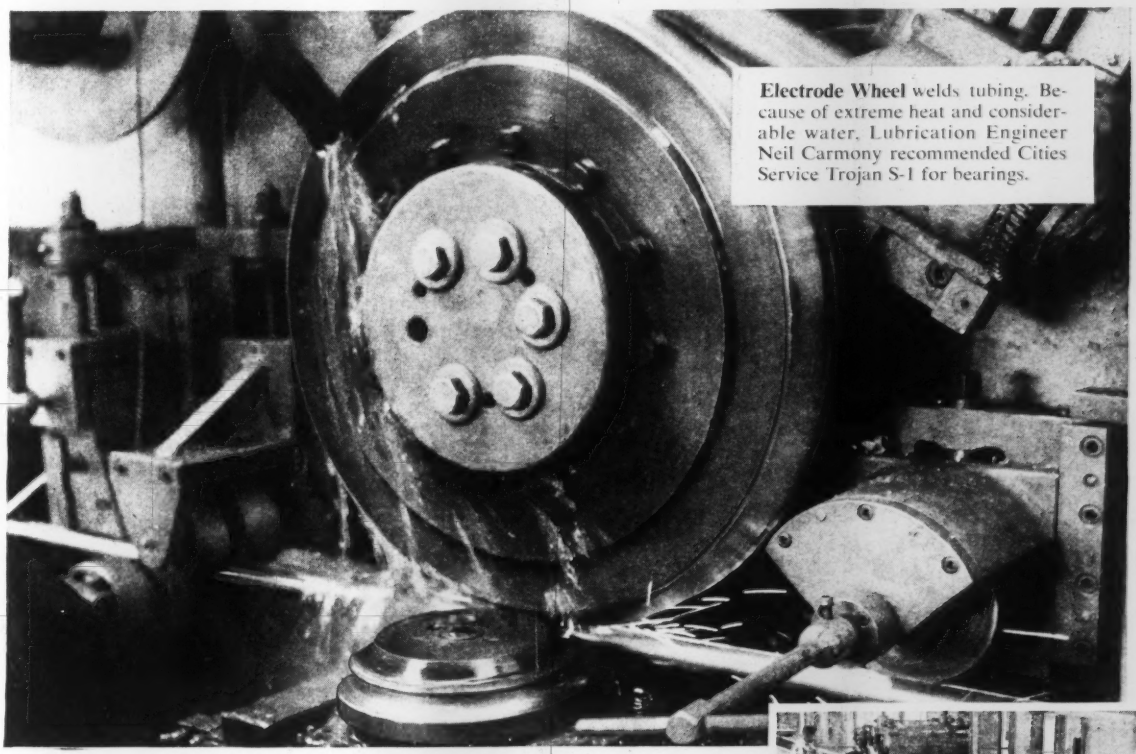
Company .....

Street .....

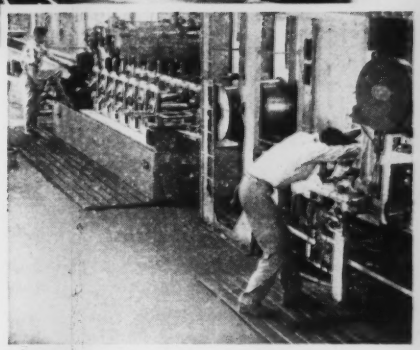
City ..... State .....

9-A-2

New Tubing Mill Produces at Speed of 350 Feet Per Minute!



Electrode Wheel welds tubing. Because of extreme heat and considerable water, Lubrication Engineer Neil Carmony recommended Cities Service Trojan S-1 for bearings.



It's Cities Service for Hydraulic System and all lubrication

On January 1, 1957, P&H Tube Corporation put a new mill in production at Bossier City, Louisiana—the only one of its kind in the United States.

Equipped with special drives and worm gears, this unique mill actually produces at the rate of 350 feet per minute—twice the speed of conventional tubing mills!

With speeds like this, you might expect lubrication troubles . . . but P&H Tube Corporation has none. One big reason is the careful study of each machine made by Cities Service Lubrication Engineer Neil Carmony—and the lubrication recommendations he made.

In hydraulic units, for example, Carmony recommended Pacemaker 200-T Hydraulic Oil . . . for he knew its ability to withstand the severest operating temperatures and speeds. He knew that due to its exceptionally high viscosity index and superior compounding, Pacemaker 200-T would give maximum resistance to thinning, oxidation, rust and corrosion.

The wisdom of this decision, as well as the choice of other lubricants shown in the chart at right, was demonstrated recently when P&H Tube Corporation ran off 125,000 feet of tubing in an ordinary eight hour shift—with normal time-out for change-overs!

That's production with a capital P! And if you'd like to improve your production picture, a Cities Service Lubrication Engineer can help you, too. Call the nearest office or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

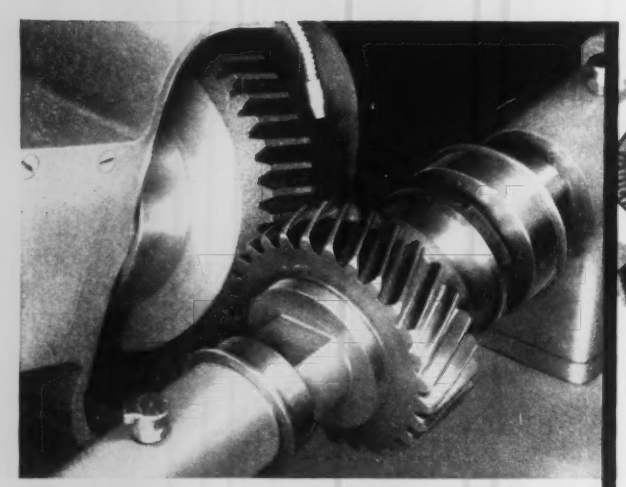
What the Cities Service Lubrication Engineer Recommended

Hydraulic units	Pacemaker 200-T
Bearings	Trojan H-2 Grease
Drive units	Pacemaker Oils
Bearings by the mill's electrodes	Trojan S-1

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Visit Booths 46-47-48, Iron & Steel Exhibit, Public Auditorium, Cleveland, Ohio, September 23-26

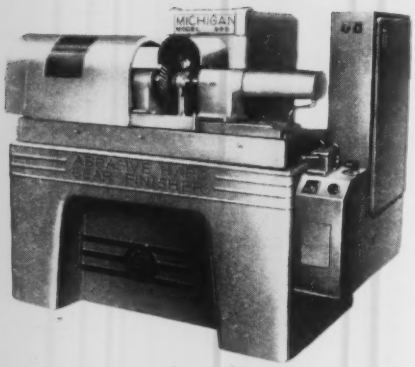


The finishing action—an abrasive tool rotates in tight mesh (and drives) the hardened work gear in a crossed-axes relationship. The table traverses the work the full face width.

Grit content of the abrasive-plastic tool varies with application. Relatively inexpensive, the throwaway tools actually become even more accurate as they "wear in".

Announcing HARD GEAR FINISHING...

. . . new process removes nicks and surface imperfections after heat treating to give you quiet, smooth-running gears. Uses long-life throwaway tools to slash rejections



Abrasive Hard Gear Finisher (Model 999), a compact, functionally styled machine cleans up and silences hard gears in about one minute. With horizontal axes, the finisher is easily tooled for semi- or full-automatic operation. An integrated gear speeder and/or crowning attachment are optionally available with the machine.

Now you can obtain consistent quietness and smoothness on your hardened small- and medium-sized gears (up to 12-inches diameter). Michigan Tool's Abrasive Hard-Gear Finisher does the job quickly and effectively at low cost. It uses amazingly long-life abrasive-impregnated tools to remove nicks and burrs, improves finish, and tightens dimensional accuracy by further refinement after heat treat. It all adds up to quiet, lower cost gears. Full details in Bulletin 999. Write for it.

MICHIGAN TOOL Company

from blank to finished gear

7171 E. McNICHOLS RD., DETROIT 12, MICH., U.S.A.
IN CANADA: COLONIAL TOOL CO. LTD.

Use quality USS Sheet and Strip ...available at your steel service center

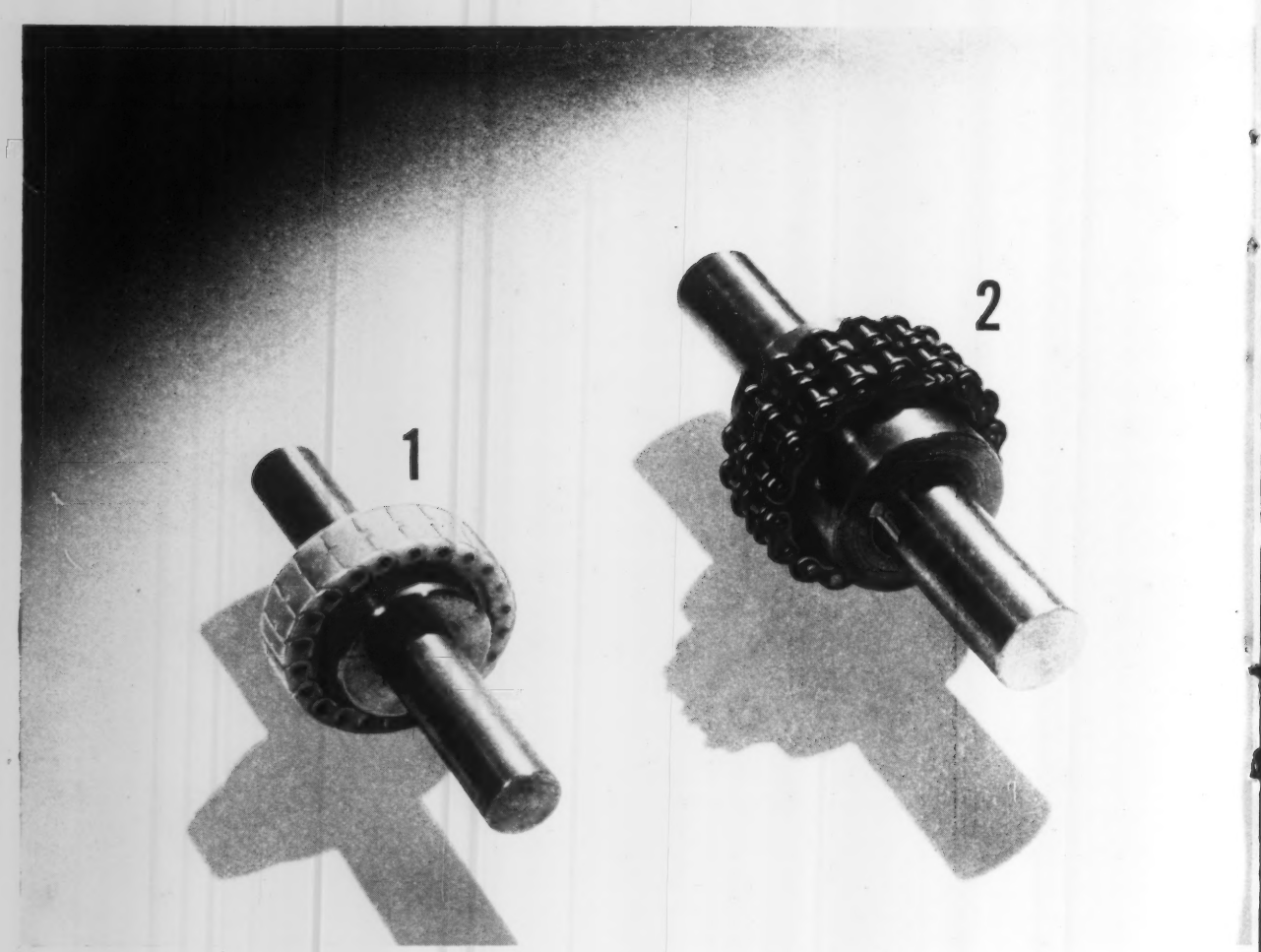
When you order **USS Sheet and Strip** from a steel service center, you're combining the fine, quality-controlled products of United States Steel with the time-saving advantages of a steel service center. The wide distribution of USS Sheet and Strip is your guarantee of prompt, efficient delivery when you order USS Sheet and Strip from a steel service center.

Steel service centers stock USS Hot-Rolled, Cold-Rolled, Galvanized, Galvannealed and Paintbond Sheets, and USS Hot-Rolled Strip.

Remember, as a part of the American Steel Warehouse Association, your steel service center has been set up specifically to handle your immediate steel demands. So the next time you order steel sheet and strip from your steel service center, be sure to specify *USS Sheet and Strip.* *USS is a registered trademark*

USS United States Steel

AMERICAN STEEL WAREHOUSE ASS'N



Morse's new Nylon Coupling means:

Nobody can answer your coupling because only Morse offers

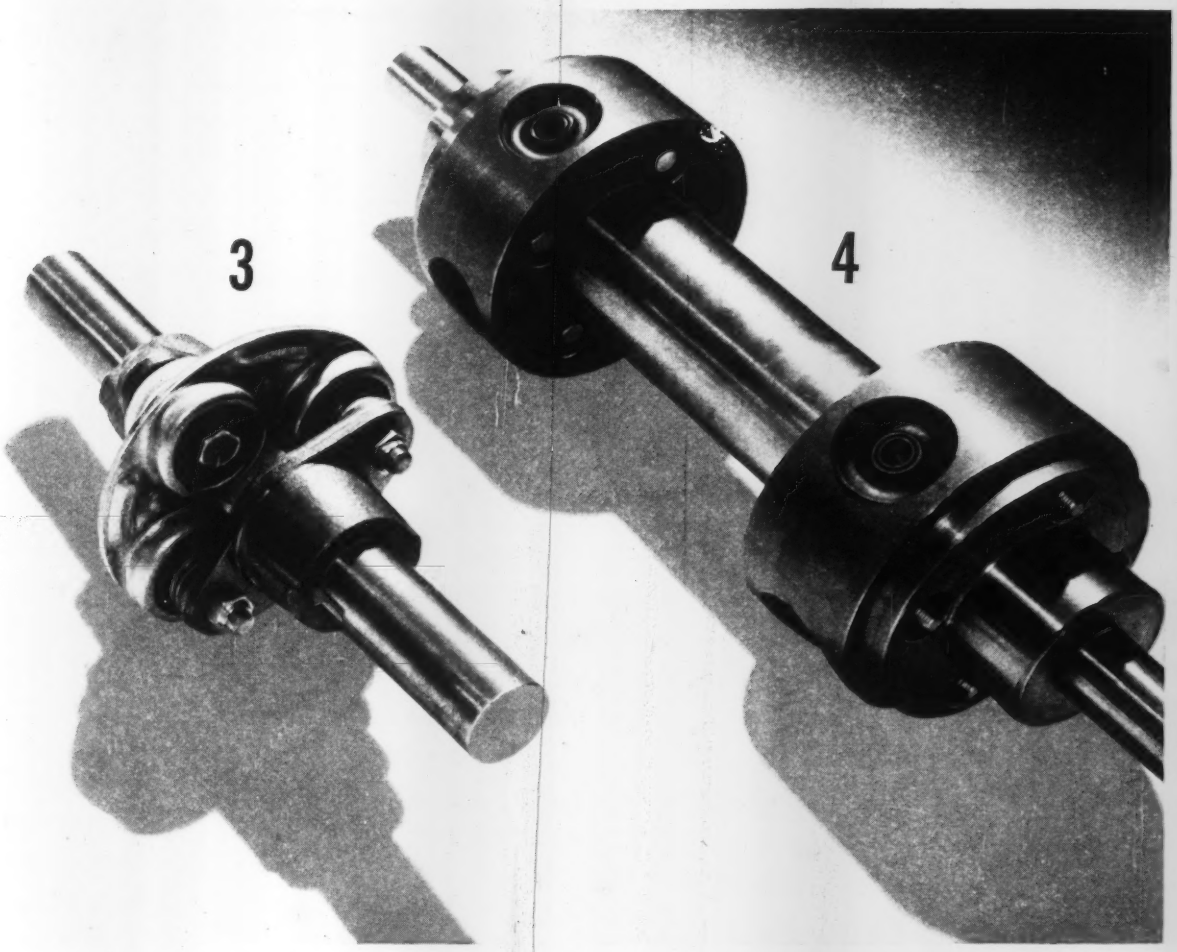
1 New Nylon Couplings:
Cost 20% less than conventional couplings; last indefinitely. Need no lubrication, no cover; take high torque; adjust to misalignment.

2 Flexible Chain Couplings:
For moderate speeds, steady loads. Rugged, economical . . . take higher h.p. per given diameter. Easy to install, align, and disassemble.

3 Morflex Couplings:
Preloaded neoprene biscuit assembly reduces misalignment stresses, increases bearing life; protects machine from shock and vibration.

4 Radial Couplings:
Neoprene biscuits—assembled radially on pins—take heavy thrusts, torques, shocks, frequent load reversals; retain torsional flexibility.

NOTE: All Morse couplings are available in driveshaft constructions.



problems as well as Morse, all four of these flexible couplings

REMEMBER: Nobody gives you a more *impartial* analysis of your power transmission problems than Morse, because *only Morse* offers all four of these basic drives: Roller Chain, Silent Chain, Hy-Vo®, and "Timing"® Belt Drives . . . plus a complete line of power transmission products.

IN POWER TRANSMISSION THE TOUGH JOBS COME TO

MORSE

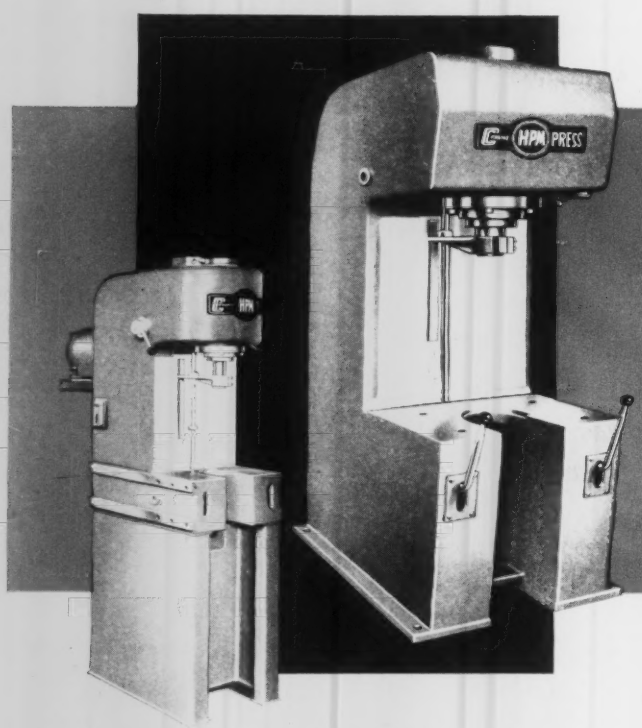
MORSE B-W BORG-WARNER *

*Trademark

MORSE CHAIN COMPANY, Dept. 2-98, ITHACA, NEW YORK. Export Sales: Borg-Warner International, Chicago 3, Illinois

MEET THE NEWEST H-P-Ms

THE NEW *Versatile* H-P-M C PRESS



- 5, 10 and 15 Ton Models
- All Models Completely JIC
- 2 Manual—2 Automatic Systems
- All Controls Interchangeable
- Small, Fast—Designed for Automation
- Heavy, Rugged Frames—Minimum Deflection
- Long Stroke—Plenty of Daylight
- Positive Ram Guides
- Complete Line of Standard Accessories

MANUAL-BASIC SYSTEM

Equipped with a spool-type, 4-way valve, designed specifically for press use, the manual press can be actuated by either dual levers, single lever, foot pedal or electrical control.

MANUAL-SERVO SYSTEM

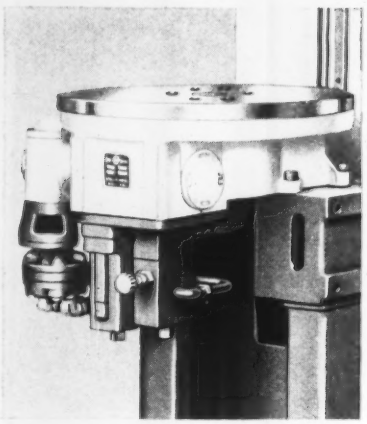
A 4-way servo valve is provided which incorporates an integral feed-back mechanism and a differential circuit which equalizes ram closing and return speeds. Controlled by either single lever or foot pedal.

AUTOMATIC-without index table

This system is equipped with a compound valve with manual controls that provides automatic auto-cycling. It incorporates pressure reversal, stroke length reversal and inching control. Various manual or electrical controls are optional.

AUTOMATIC-with index table

This system is similar to the one above, but has the added feature of provision for driving and interlocking the index table. Various manual or electrical controls are optional.



The outstanding features of these new H-P-M C-Presses rate them above any comparable presses now available. Their special design makes them ideal as high speed automated units or general purpose machines. Over 80 years of specialized experience and engineering in hydraulics have gone into their manufacture.

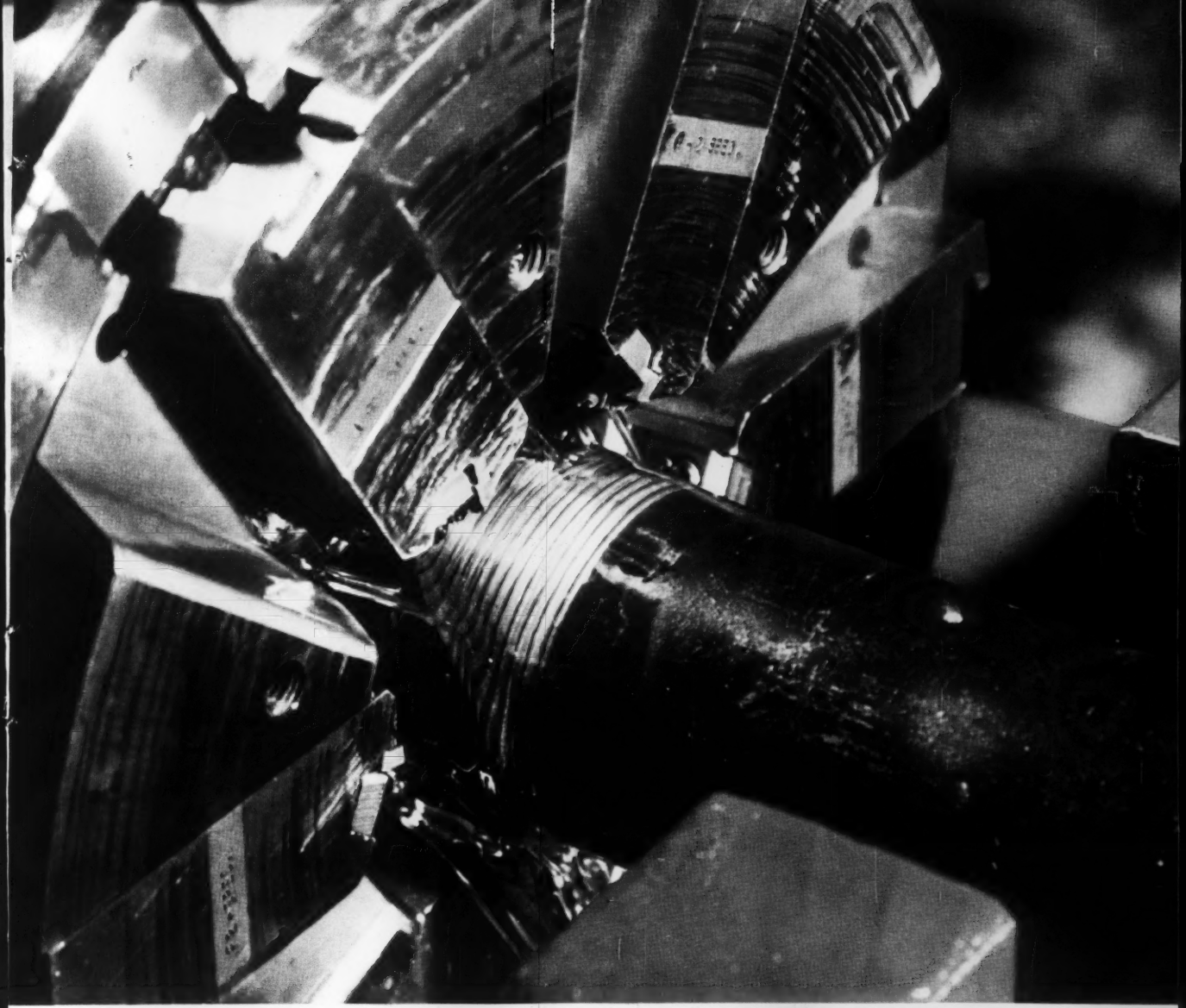
The new H-P-M Index Table, shown above, has an extremely high indexing speed and load capacity, plus many new features. Designed for use with the new C-Presses, this combination may also be the solution to your cost-cutting problems. Get all the facts today on this remarkable new line from your H-P-M engineer. He is as near to you as your telephone.

H839

THE HYDRAULIC PRESS MFG. COMPANY

A DIVISION OF KOEHRING COMPANY • MOUNT GILEAD, OHIO, U. S. A.

HPM



This is just one of the many applications of Sunicut 85, which is one of a whole series of Sunicuts . . . all transparent.

SUNICUT 85 is a heavy-duty cutting oil that lets you see what you're doing

Transparent, fast-draining Sunicut 85 leaves the workpiece clear for inspection as you go.

Especially designed for use on high-alloy steels, Sunicut 85 is ideal for heavy-duty work on automatic screw machines and production form grinders. It's a natural for pipe threading and similar heavy-duty operations requiring frequent and close inspection.

Easy pumping, fast metal-wetting, and excellent extreme-pressure lubrication are other advantages of Sunicut that lead to production economy for you.

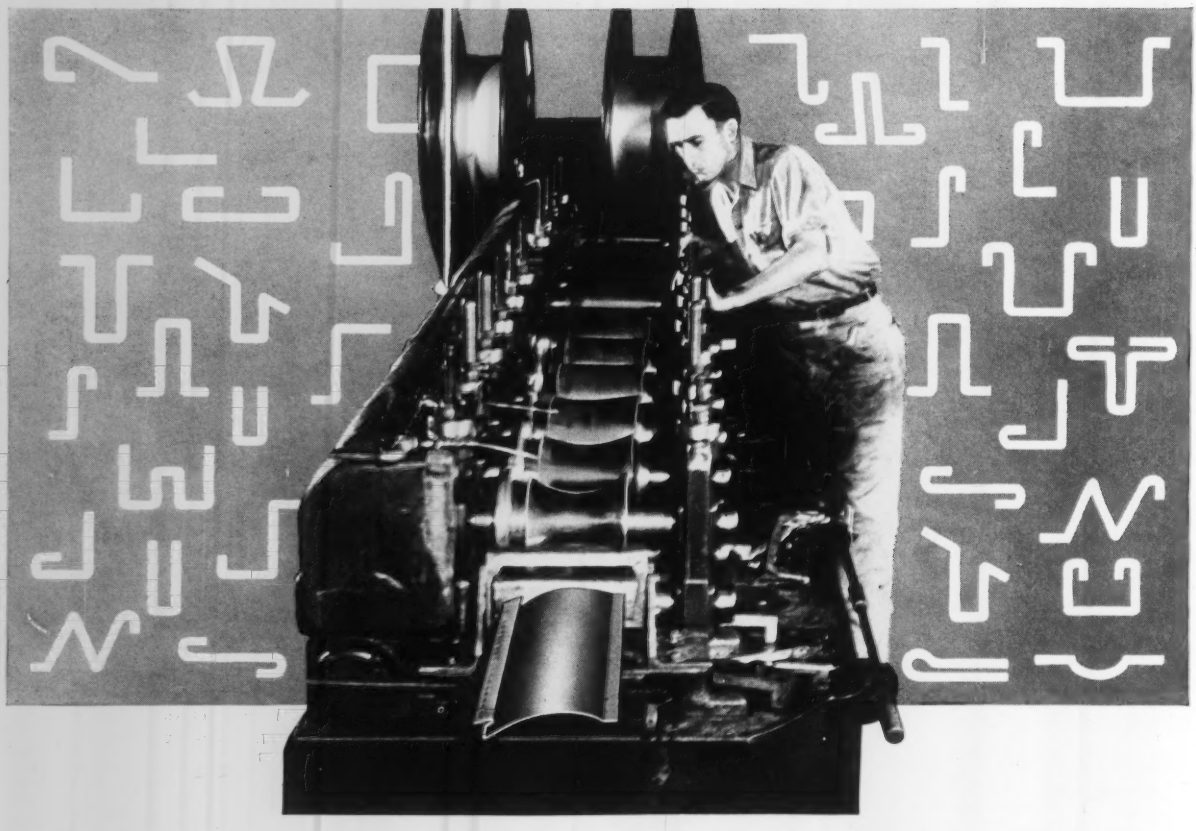
Ask your Sunoco representative about saving money with Sunicut, or write to Dept. I-10.

Industrial Products Department

SUN OIL COMPANY, Phila. 3, Pa.

SUNOCO

In Canada: Sun Oil Company Limited, Toronto and Montreal



With a Yoder . . . ONE MAN PRODUCES 30,000 FEET OF SHAPES A DAY!

Cold-roll forming with a Yoder Roll-Forming machine makes spectacular production possible in many metalworking applications and industries.

A multitude of shapes, simple or complex, produced from a wide variety of coated or uncoated stock, and destined for a virtually endless list of purposes, can be easily, quickly and economically produced with a Yoder cold-roll forming machine.

Whether it be moldings, structurals, siding, roofing, tubulars, cabinet shells, or any one of a thousand requirements, it can be quickly produced with accuracy and uniformity the Yoder way. The conversion cost is usually so low that even part-time operation makes a Yoder cold-roll forming line a profitable investment.

A great many modifications of the basic shape such as welding, coiling, ring forming, notching, perforating, embossing and cutting to length, can be simultaneously introduced with little or no additional labor cost. It will pay you big dividends to fully investigate the advantages of Yoder cold-roll forming. A fully-illustrated, 88-page book clearly discusses every important aspect of this amazingly versatile method of metal fabrication . . . it is yours for the asking.

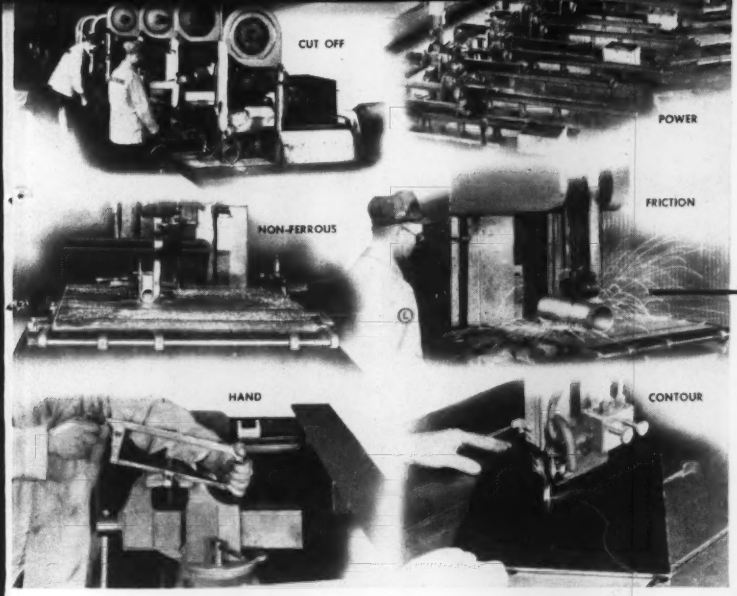
THE YODER COMPANY
5502 Walworth Ave. • Cleveland 2, Ohio
Visit Booth 2770, Metal Show
Cleveland, Ohio, October 27-31

ENGINEERING
YODER
MANUFACTURING

COLD ROLL FORMING MACHINES

PIPE AND TUBE MILLS (ferrous or non-ferrous)

ROTARY SLITTING LINES



LADISH

Controlled Quality

SAW BLADES

A complete line backed by industry's most extensive sawing experience

Prove for yourself . . . with an actual on-the-job demonstration . . . the high performance and dependability of Ladish blades.

This line is designed, developed and produced from experience gained in cutting millions of pounds of carbon and constructional alloy and stainless steels, high temperature materials and non-ferrous metals.

Sustained cutting efficiency of Ladish blades is assured by unequalled metallurgical and manufacturing controls.

7 WAYS LADISH GIVES YOU COMPLETE SERVICE

- *COMPLETE LINE*
- *UNEQUALLED EXPERIENCE*
- *CONVENIENT PACKAGING*
- *TECHNICAL ASSISTANCE*
- *COMPLETE STOCKS*
- *UNSURPASSED METALLURGY*
- *PRODUCED TO LADISH CONTROLLED QUALITY STANDARDS*

SPECIFY LADISH
ON YOUR NEXT ORDER

TO MARK PROGRESS

LADISH CO.

CUDAHY (Milwaukee Suburb) WISCONSIN

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Calgary • Chicago • Cleveland • Denver • Havana • Houston
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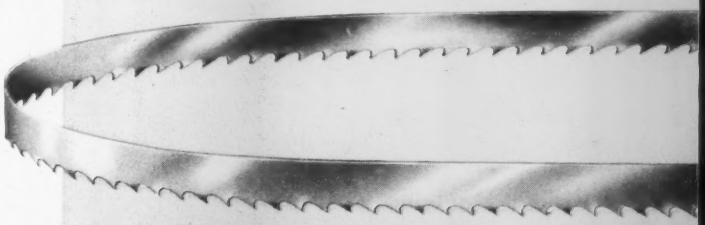
SAW BLADES • PIPE FITTINGS • DROP FORGINGS • RINGS • VALVES

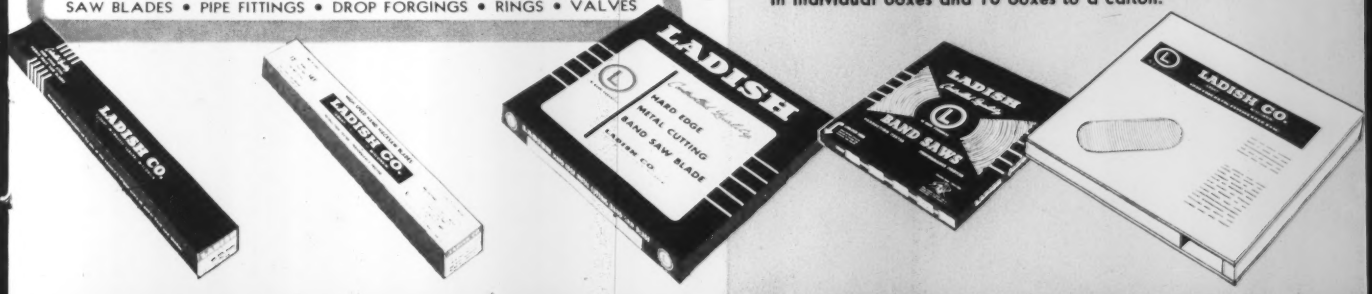
POWER High-Speed Steel. Sizes 12" through 36"; 3 to 14 teeth per inch.

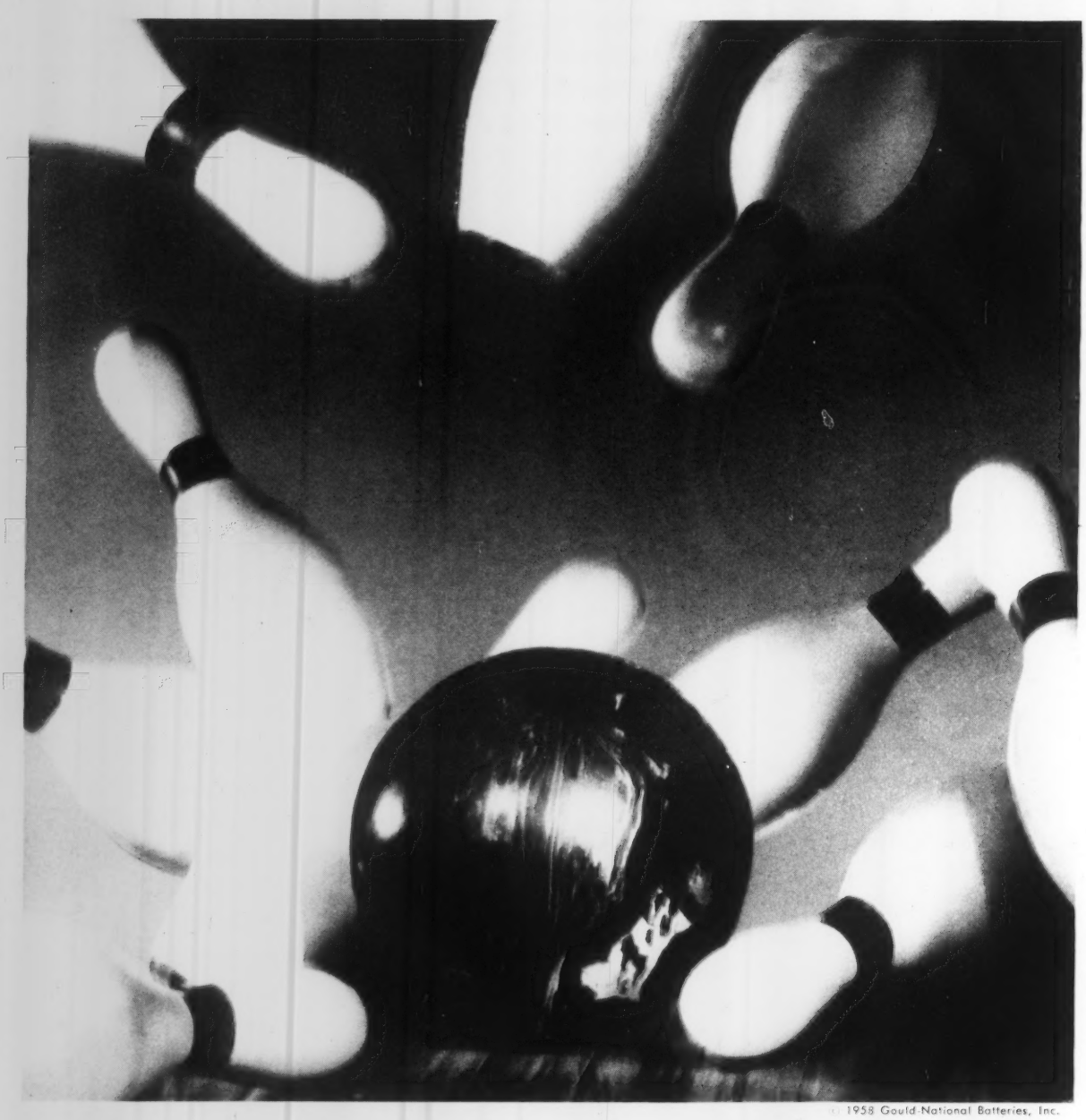
BAND Raker and wavy sets; skip-tooth, positive rake and friction cutting designs. Sizes ⅛" through 1". Welded to specified length or in 100', 250' and 500' coils.



HAND Molybdenum—Flexible. Sizes 10" and 12"; 14 to 32 teeth per inch.

PACKAGING—Power blades—10 per carton. Hand blades—100 per carton. Band saws—coil stock in window-type cartons and wood boxes; or welded bands in individual boxes and 10 boxes to a carton.





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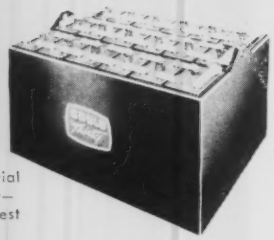
STRIKE HARD *at today's high operating costs*

. . . specify **gould** *batteries*



Gould Industrial Truck Battery—America's Finest

You can be sure of lowest battery costs and highest operating efficiency —year in, year out—with Gould Batteries. Why? Because there's a *cost-reducing benefit* behind every feature, of every battery in the Gould line.

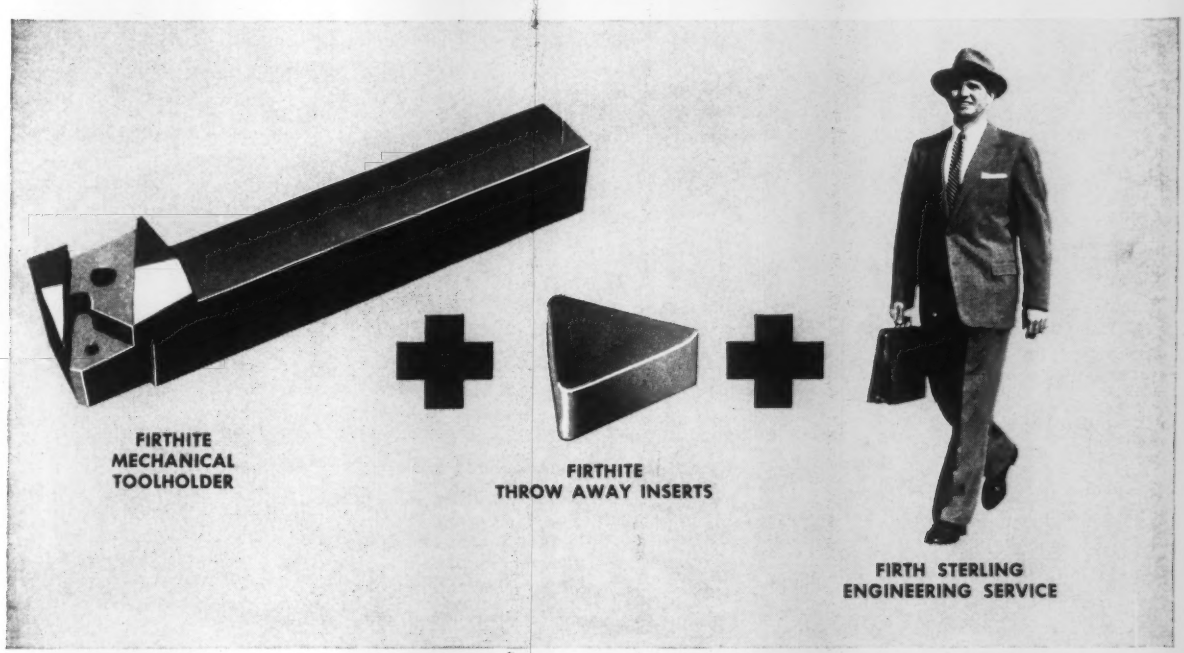
That's why it pays you to standardize on Gould. Call your local Gould representative for details. He's listed under "Batteries, Industrial" in the Yellow Pages. Gould-National Batteries, Inc., Trenton 7, N. J.

More Power to you from Gould

Always Use Gould-National Automobile and Truck Batteries

Firth Sterling . . .

PIONEER IN POWDER AND MOLTEN METALLURGY



TOOL UP FOR ECONOMY

with this cost-cutting combination

There are two important reasons why thousands of metalworking plants are cutting costs with Firth Sterling mechanical toolholders, throw away inserts and engineering service. First, the broad experience and expert application knowledge of Firth Sterling engineers (yours at no cost) help you plan your tooling program for maximum savings. Second, in this complete line, Firth Sterling has toolholders and inserts—*exactly* right for *your* job:

THRIFTOOL—lowest cost toolholder made. Offers chipbreaker, rigid insert and rapid indexing for reduced set-up time.

ECONODEX—medium priced holder is ideal for jobs requiring positive rake. Carbide anvil and carbide chipbreak clamp assure long life.

MECHANIDEX—for heavy-duty machining. Adjustable chipbreaker offers extreme versatility, allowing top and bottom indexing of inserts.

FIRTHITE INSERTS—most precise dimensionally—are available in a full range of Carbide grades and the new Firthite Cermet WF Grade. *Now available for the first time, high speed steel throw away inserts in two of Firth Sterling's top cutting grades—Circle C and Van Chip.*

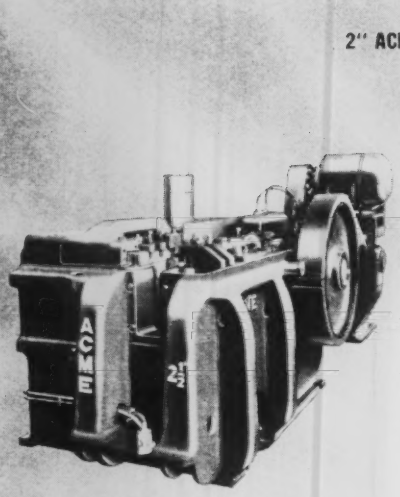
To get help with *your* tooling problem from a Firth Sterling engineer, simply call your nearest Firth Sterling sales office or distributor. And for further information on Firth Sterling toolholders and inserts, write for descriptive bulletin MTI-3: FIRTH STERLING, INC., Dept. 81-J, 3113 Forbes St., Pittsburgh 30, Pa. Offices and warehouses in principal cities.

"Your Future is Great in a Growing America"

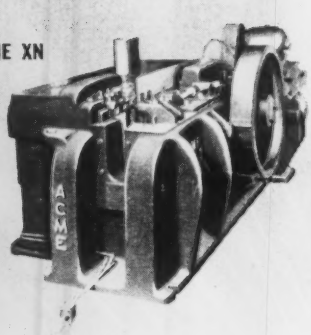
PRODUCTS OF Firth Sterling METALLURGY

HIGH SPEED STEELS • TOOL & DIE STEELS • STAINLESS SPECIALTIES • HIGH TEMPERATURE ALLOYS
SINTERED TUNGSTEN CARBIDES • HEAVY METAL • CERMETS • CHROMIUM CARBIDES
ZIRCONIUM • TITANIUM • STERVAC & STERCON SUPER ALLOYS

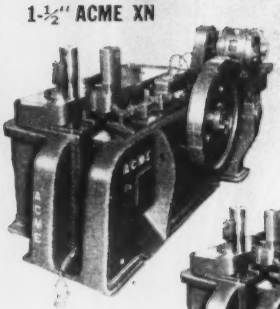
FIRTH STERLING TRADE MARK



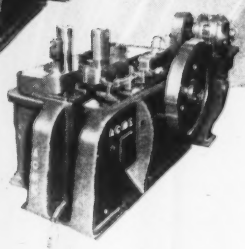
2" ACME XN



1-½" ACME XN



1-¼" ACME XN



...and we can prove it!

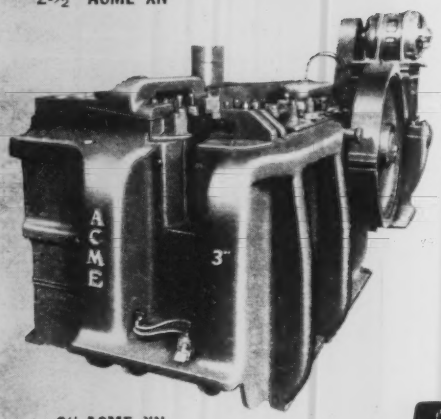
We can prove to your satisfaction that it is uneconomical to rebuild or modernize ANY upset forging machine more than 25 years old. Temporary conditions may make a rebuilding program attractive but a new ACME XN forging machine in a size suited to your needs will pay for itself in:

Less down-time
Increased production
Better quality of forging
Lower maintenance
Greater versatility

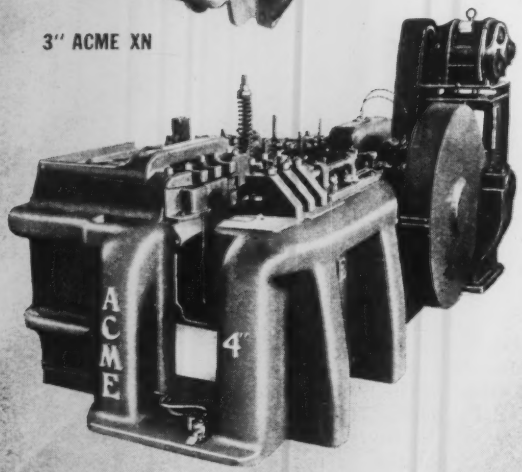
We can supply facts and figures to prove this statement.

Acme Model XN Forging Machines are made in seven sizes from 1¼" to 5" capacity. Conveyor type automatic feed is available on all sizes. Complete details available in Bulletin 58XN.

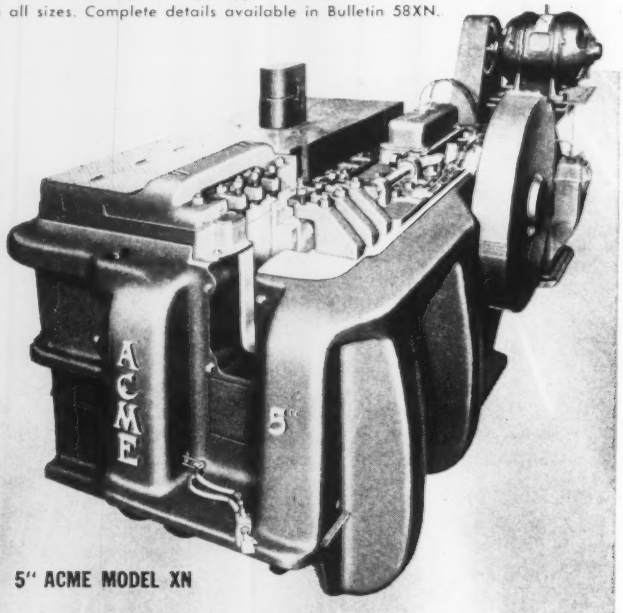
2-½" ACME XN



3" ACME XN



4" ACME MODEL XN



5" ACME MODEL XN

The HILL ACME Company

1207 W. 65th STREET • CLEVELAND 2, OHIO

"ACME" FORGING • THREADING • TAPPING MACHINES • ALSO MANUFACTURERS OF "HILL" GRINDING & POLISHING MACHINES HYDRAULIC SURFACE GRINDERS • "CANTON" ALLIGATOR SHEARS • BILLET SHEARS • "CLEVELAND" KNIVES • SHEAR BLADES

An announcement of interest to manufacturers of steel parts

Improvements in today's STRESSPROOF® STEEL BARS WITH COPPER

1 **100,000 PSI YIELD STRENGTH** in all sizes . . . without heat treating.

2 **IMPROVED PHYSICAL PROPERTIES...** better fatigue life wearability, and resistance to atmospheric corrosion. Over-all quality is improved.

3 **IMPROVED MACHINABILITY...** STRESSPROOF with copper now machines faster and better than ever. It gives longer tool life, better finish, and more production from a day's run, according to shop production records.

4 **CLOSER TOLERANCES...** Tolerances for rounds have been tightened to meet the need for more precise parts as follows:

¼" to 1½"	Over 1½" to 2½"	Over 2½" to 3⅜"
+.000 −.004	+.000 −.005	+.000 −.006

5 **COMPARED WITH OTHER STEELS, STRESSPROOF COSTS EVEN LESS TODAY...** Also saves machining and heat treat costs, and you get a better quality part. It will pay you to take another look at this improved material.

Your STEEL SERVICE CENTER stocks contain today's STRESSPROOF. It has been produced and shipped over a several months' period.

JUST PUBLISHED! Use this coupon to request your copy of new bulletin, "Improvements in Today's STRESSPROOF Steel Bars."

La Salle STEEL COMPANY

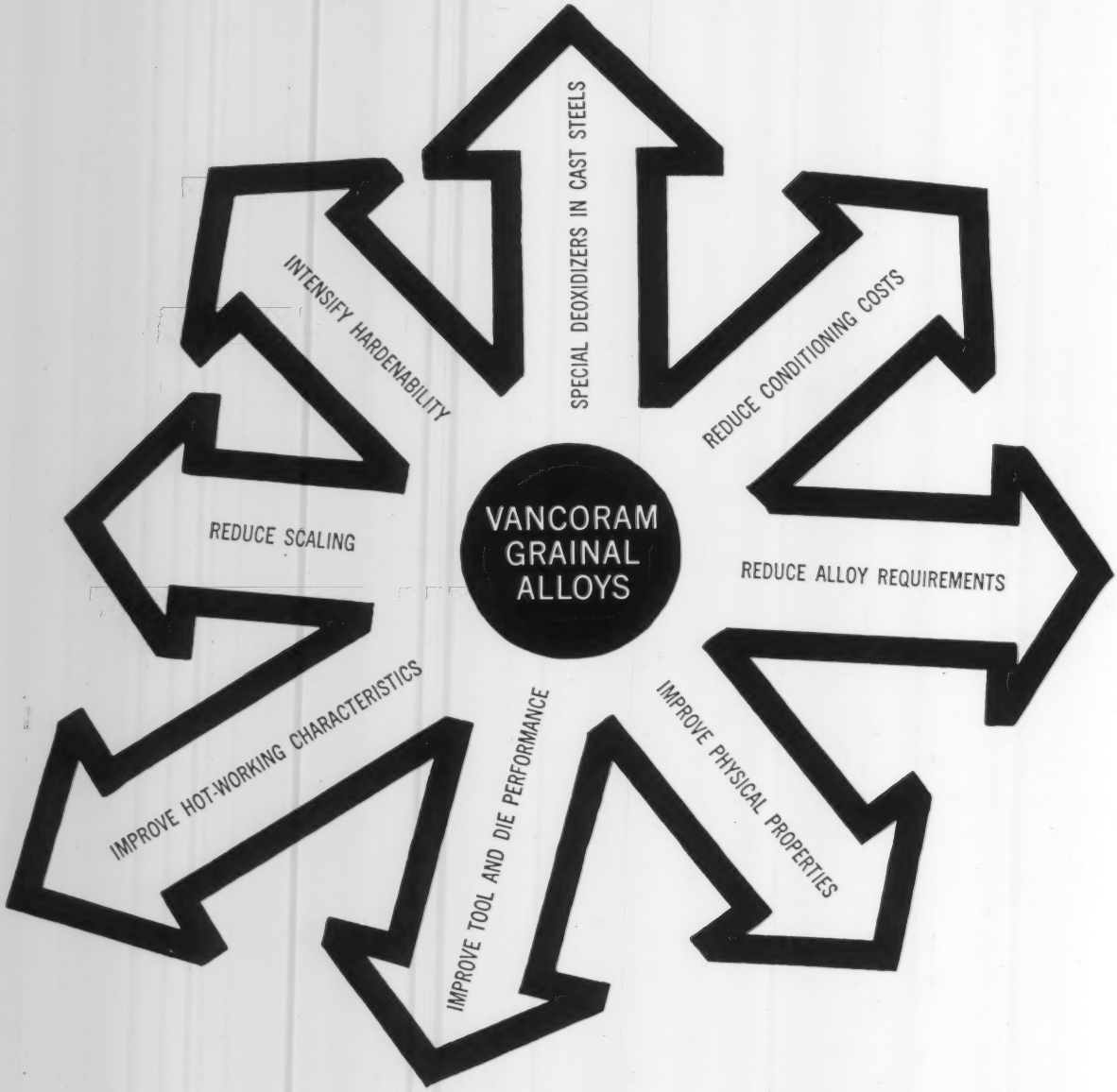
1414 150th Street, Hammond, Indiana

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____



. . . SO MANY JOBS SO WELL! Vancoram Grainal Alloys improve hot-working characteristics and reduce conditioning costs and rejections in stainless and heat-resisting steels. They intensify hardenability, reduce scaling. They improve tool and die performance in cold upsetting, blanking, punching, pressing, forming. Grainal Alloys lower steel cost by reducing alloy requirements, and improve physical properties of high-strength cast steels. And they are used as special deoxidizers in cast steels. What other alloy can do so many jobs so well?

Learn more about the special versatility of Vancoram Grainal from the booklet, "Grainal and Its Use." Write or phone your nearest VCA District Office for your free copy.

VANADIUM CORPORATION OF AMERICA

Producers of alloys, metals and chemicals

420 Lexington Avenue, New York 17, N. Y. • Chicago • Cleveland • Detroit • Pittsburgh

New from Signode...

Saves a Foot of Strap Every Time It's Used!

Here is the first feed wheel heavy-duty tensioning tool!

The FN-114 is air powered...takes 1¼-inch strapping directly from the dispenser and cuts it after tensioning. No waste strap.

- Can save a foot or more of strap every time it's used.
- Easier and faster to load and use than a windlass type tool.
- Air power does the tensioning. A quick stroke of the handle severs the strap and disengages the tool.
- Unlimited take-up...pulls to pre-set tension every time.
- Plenty of power—from 1500 to over 3000 pounds tension, depending on air pressure setting.
- Thoroughly field tested in over eight months of actual use.

The FN-114 is a tough, rugged 20-pound tool. Next to the time it saves, its most important advantage to most users is the fact that it eliminates waste in the curl of strap which until now has been a necessary evil in applying 1¼-inch strapping with windlass type tools.

The FN-114 stretcher—like other Signode heavy-duty tools—is available on a choice of arrangements that minimize your capital investment. Let us arrange a demonstration on your premises at your convenience. Just write or call. No obligation.

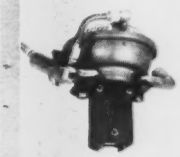
No wasted pigtail of strapping from a windlass type tool.

114-OF Seal

New 1¼-inch Seal—slips over strapping just before tensioning. This seal or regular thread-on seal can be lithographed with your company name, trademark, and colors.

New DA-114 "Cobra" Heavy Duty Dispenser—floor type dispenser has low inertia for easy pulling with little overrun. Easy to load (floor level). Feeds strap at convenient waist height in almost any direction.

DA-114 Cobra Dispenser



RCN-1435 Sealer

Heavy Duty Air-power Sealer applies 1¼-inch seals quickly and easily at the push of a button, with maximum security. Make this power sealer part of your strapping set-up with the FN-114 for maximum savings.

First in steel strapping

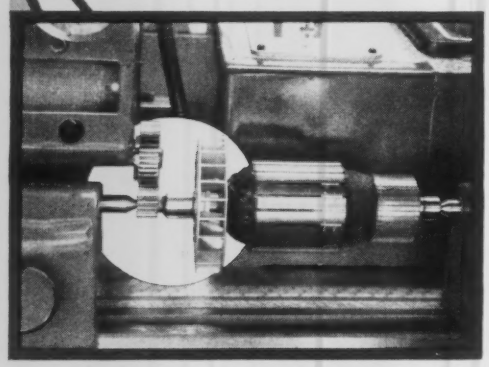
SIGNODE STEEL STRAPPING CO.

2645 N. Western Avenue, Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide

In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

GEARED to give lightweights heavyweight power!



Fellows Inspection Instrument checks gear at a major gear-motor manufacturer. Integrated Fellows production and inspection equipment assures dependable quality control.

Power used to mean *weight*, too, but not any more; modern gear-motors pack immense power in a small volume, deliver maximum output per pound. Light executive aircraft use powered accessories only large planes could carry ten years ago. Products as diverse as home appliances and machine tools have grown steadily more powerful while shrinking in size and weight.

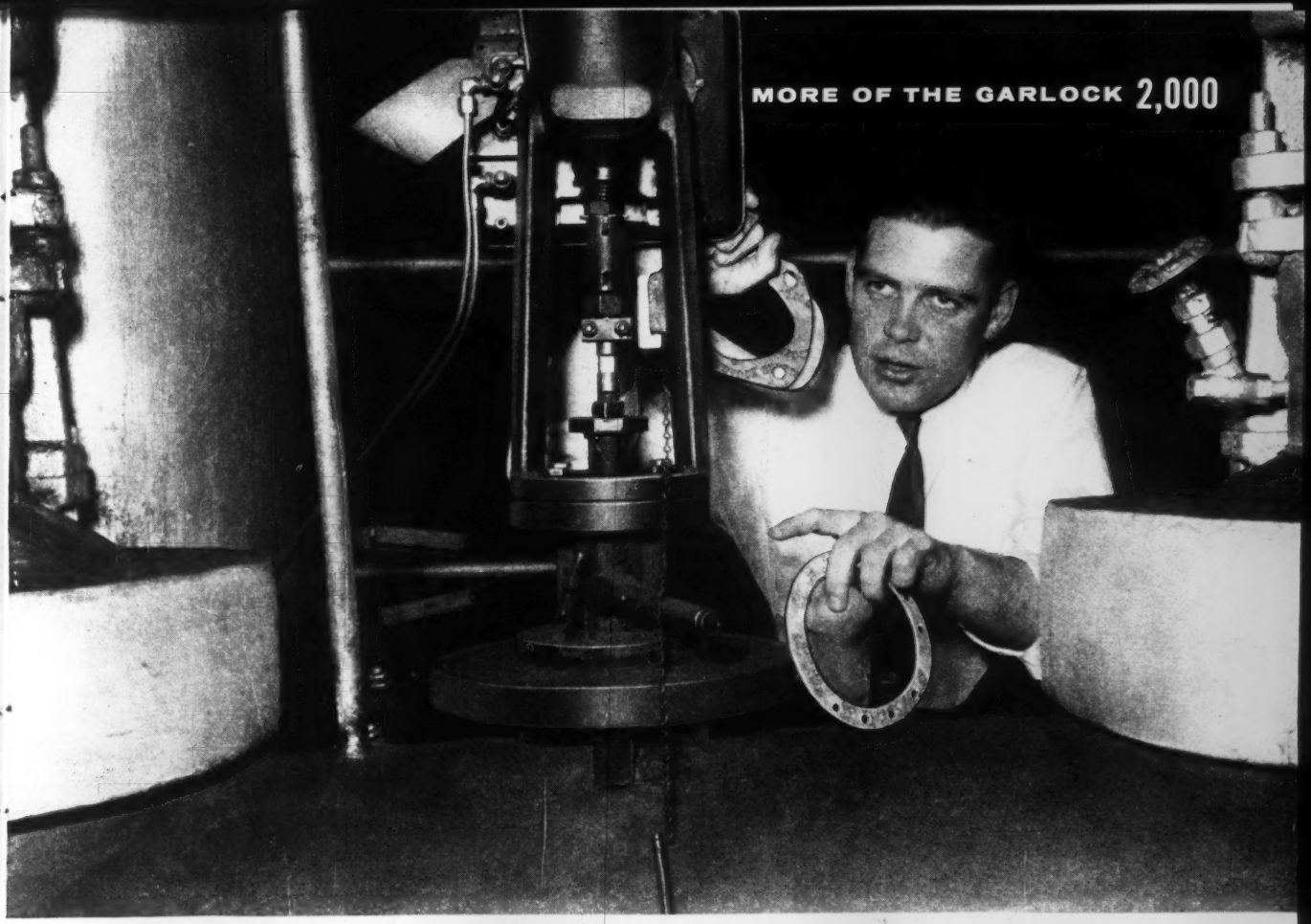
Accurate, dependable gears produced on Fellows equipment are essential to the performance of many of these mighty midgets. Their operation must be relatively smooth and quiet, even with the high reduction ratios required in many of them. Here, as in many other applications, Fellows Gear Shapers combine accuracy with production speed and low unit cost.

Your own gear production needs, from 1/16" to 120" pitch diameter, can probably be met more efficiently and profitably with Fellows equipment. For full information, get in touch with any Fellows office.

THE FELLOWS GEAR SHAPER COMPANY
78 River Street, Springfield, Vermont
Branch Offices:
1048 North Woodward Avenue, Royal Oak, Mich.
150 West Pleasant Avenue, Maywood, N. J.
5835 West North Avenue, Chicago 39
6214 West Manchester Avenue, Los Angeles 45

THE PRECISION LINE

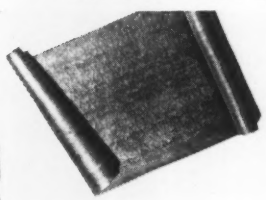
Fellows *Gear Production Equipment*



"If you're gasketing against steam or gases to 700°F., try GARLOCK 900"

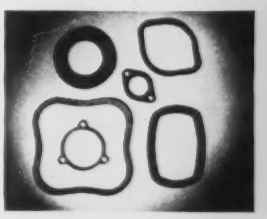
Most engineers agree, that safe positive sealing of pipe flanges and gasketed joints on systems handling steam, gas, or air to 700° F. is best accomplished with a gasket material such as Garlock 900 which is resistant to plastic flow, but is compressible enough to compensate for surface irregularities. Garlock 900 is made from long fiber Canadian asbestos and a special rubber compound bonded under pressure and vulcanized into a homogeneous structure . . . compressible, yet resistant to plastic flow.

"...for hot oils use GARLOCK 7021"



Sealing against hot oils to 700° F. on pipe lines, internal combustion engines, compressors, or other high temperature applications calls for a strong dense gasketing such as Garlock 7021 . . . oil resistant, compressible, yet unusually resistant to plastic flow under heavy bolt loads.

"...for solvents to 300°F.—GARLOCK 7228"



This Compressed Asbestos and Neoprene Gasketing for gasketed joints and pumps, provides the desired compressibility necessary for safe gasketing on systems handling solvents or oils . . . without plastic flow under heavy bolt loads.

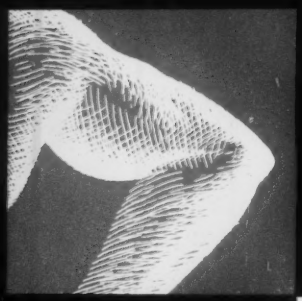
These high temperature gaskets are still another part of the Garlock 2,000 . . . two thousand different styles of packings, gaskets, and seals for every need. The only complete line. That's why you get unbiased recommendations from your Garlock representative. Call him or write for Gasket Folder AD 162.

THE GARLOCK PACKING COMPANY, Palmyra, N.Y.

For prompt service, contact one of our 30 sales offices and warehouses throughout the U.S. and Canada.

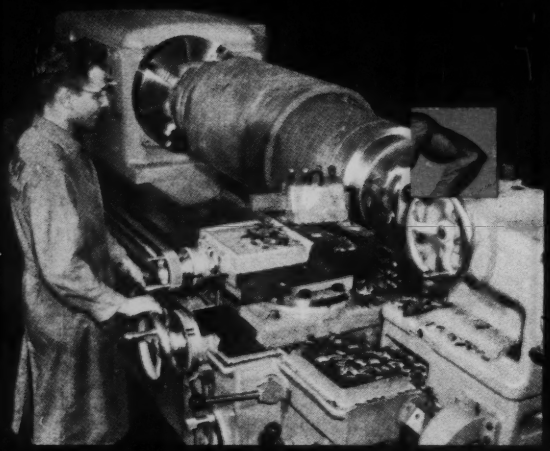
GARLOCK

Packings, Gaskets, Oil Seals, Mechanical Seals, Molded and Extruded Rubber, Plastic Products



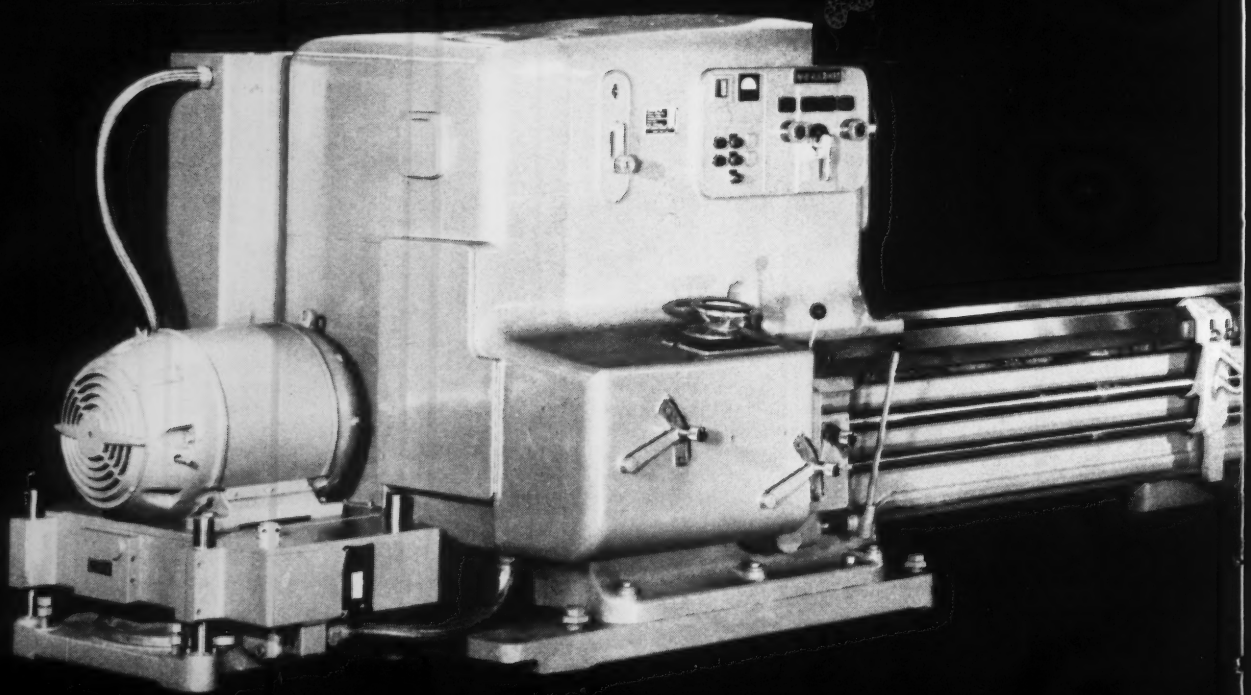
BRAWN

BRAINS



The MONARCH SERIES 90 DYNA-SHIFT HEAVY-DUTY LATHE – Model 2500: Clearance diameter —40″ . . . Swing over cross slide 25″. **Model 2501:** Clearance diameter—44″ . . . Swing over cross slide 31″. **Model 2502:** Clearance diameter—48″ . . . Swing over cross slide 36″.

When progressing from diameter to diameter, speed is changed in a few seconds with the flick of *one* dial. The *machine* calculates each speed and changes speed automatically. And the wide available range assures selection of the *right* speed for the diameter to be turned.



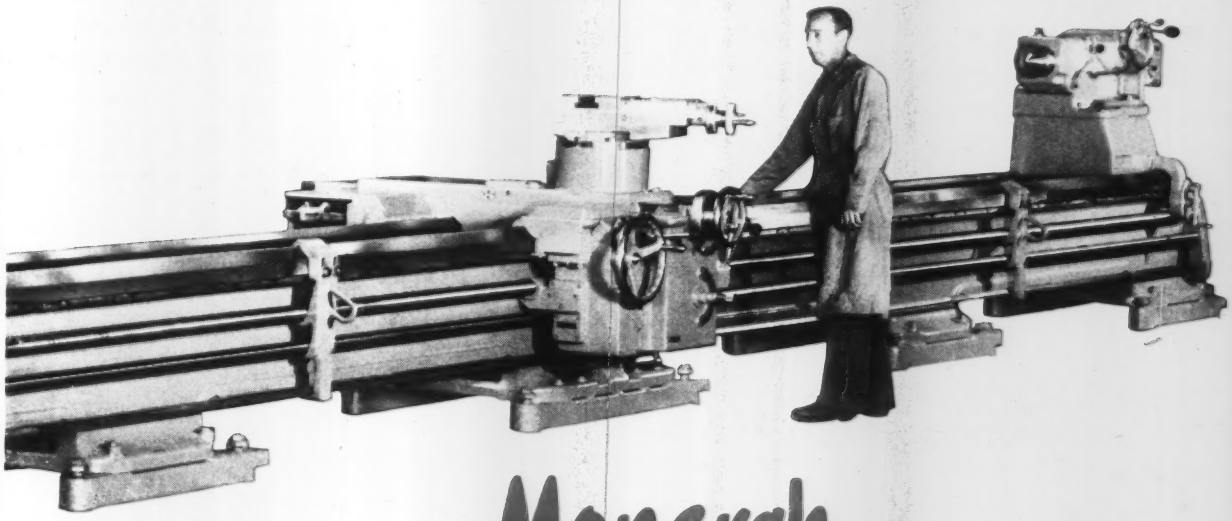
. . The Monarch Heavy-Duty Dyna-Shift

In a class by itself! Just set the work diameter indicator. In a flash, the exclusive Dyna-Shift drive headstock calculates and delivers the ideal spindle speed (36, from 6 to 750 RPM).

You get strength and power to match the brains. The equivalent of 60 H.P. gives this lathe the power to break and the speed to burn any carbide tool. And the massive design supports the heaviest of cuts.

Now, you can use carbide tooling to its ultimate advantage, with metal removal rates up to 120 cubic inches per minute, turning alloy steel. Always used at proper cutting speed, you get the ultimate in productiveness, maximum tool life, and close accuracy.

Here's a machine you've got to know about, and our twenty-four page illustrated booklet #1601 tells you in detail. Just ask . . . The Monarch Machine Tool Company, Sidney, Ohio.



Monarch

TURNING MACHINES

ACCURACY • ECONOMY • LONG LIFE

FOR A GOOD TURN FASTER . . . TURN TO MONARCH

your individual tubing specs are a **BISHOP specialty**

That special tubing you need doesn't have to be a frustrating problem — BISHOP delights in tackling tough specs. BISHOP is uniquely equipped to handle specials—long on experience and capacity, short on delivery. You'll get help within 24 hours from a Quick Service Team of sales, metallurgical and production experts—and unexcelled quality tubing . . . the finest made.

Briefly, the Bishop Line . . .

STAINLESS STEEL TUBING Seamless, Welded & Drawn	Mechanical, Aircraft, Capillary, Hypodermic also NEW Stabilized and L grades, precipitation hardening alloys	0.008" to 1.000" OD 0.003" to 0.083" wall
NICKEL & NICKEL ALLOY TUBING	All standard grades	up to 1.000" OD 0.065" wall max
TUBULAR FABRICATED PARTS	Flanged, flared, milled, slotted, swaged, threaded	
GLASS-TO-METAL SEALING ALLOYS	Low expansion alloys for glass sealing applications	
CLAD METALS & COMPOSITE WIRES	Base metals & precious metals in various combinations	
PLATINUM GROUP METALS	Fabricated products—chemicals	

CATALOGS, DATA SHEETS ON THE ABOVE SENT PROMPTLY ON REQUEST

Send in your individual specs for prompt handling, thorough analysis, prices, deliveries. Write, wire or phone Malvern 3100, or call your local steel service center.

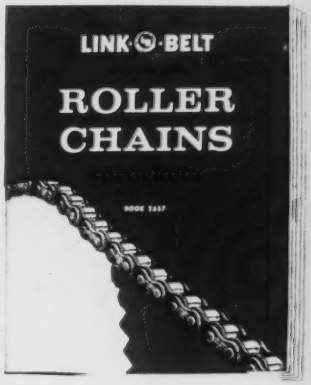
Tubular Products Division

J. BISHOP & CO.

platinum works

MALVERN, PENNSYLVANIA

NEW roller chain engineering data book



154-pages of application information, engineering data . . . sectionalized for easiest use

Not just another catalog, but an entirely new engineering handbook — the most comprehensive, easiest-to-use yet published on design and application of modern roller chain and sprockets.

Contains full data on the complete Link-Belt line of roller chain for both power transmission and conveyors . . . helpful application facts . . . new designs. Mail the coupon below for your free copy.

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ROLLER CHAIN AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

LINK-BELT COMPANY
Dept. RC, Prudential Plaza, Chicago 1, Ill.
Please send me a copy of the new Link-Belt Roller Chain Book 2657.

Name_____

Firm_____

Address_____

14,963

Shearing capacity of this machine is 12'-0" x ½" mild steel. Note accessibility of two cranks on right end housing. Upper crank is for knife adjustment. Lower one is for back gauge adjustment.

Vinson Steel and Aluminum Co.
Dallas, Texas says:

Adjustable Blade Clearance Allows Use of Shear for Complete Range of Thicknesses

THE feature that Vinson Steel and Aluminum Company likes best on their Steelweld Shear is the adjustable blade clearance. This permits them to use the one machine for their complete range of thicknesses. They go as low as 26 gauge galvanized material and up to ½ inch mild steel and ½ inch aluminum.

As a leading supplier of metal in North and West Texas, Vinson insists on cuts being sharp, straight and accurate. This requires that the blade clearance be correct for every thickness cut. Because of the unique easy method of adjusting the clearance on Steelweld Shears, the adjustment can be made in seconds.

Another item which is impressive is the low maintenance cost. This machine has been in service for over two years, and the maintenance has been practically nil.

More and more warehouses are installing Steelweld Shears. Usually one will handle a range of work that would require two or more other type machines not built with a fast knife adjustment feature.

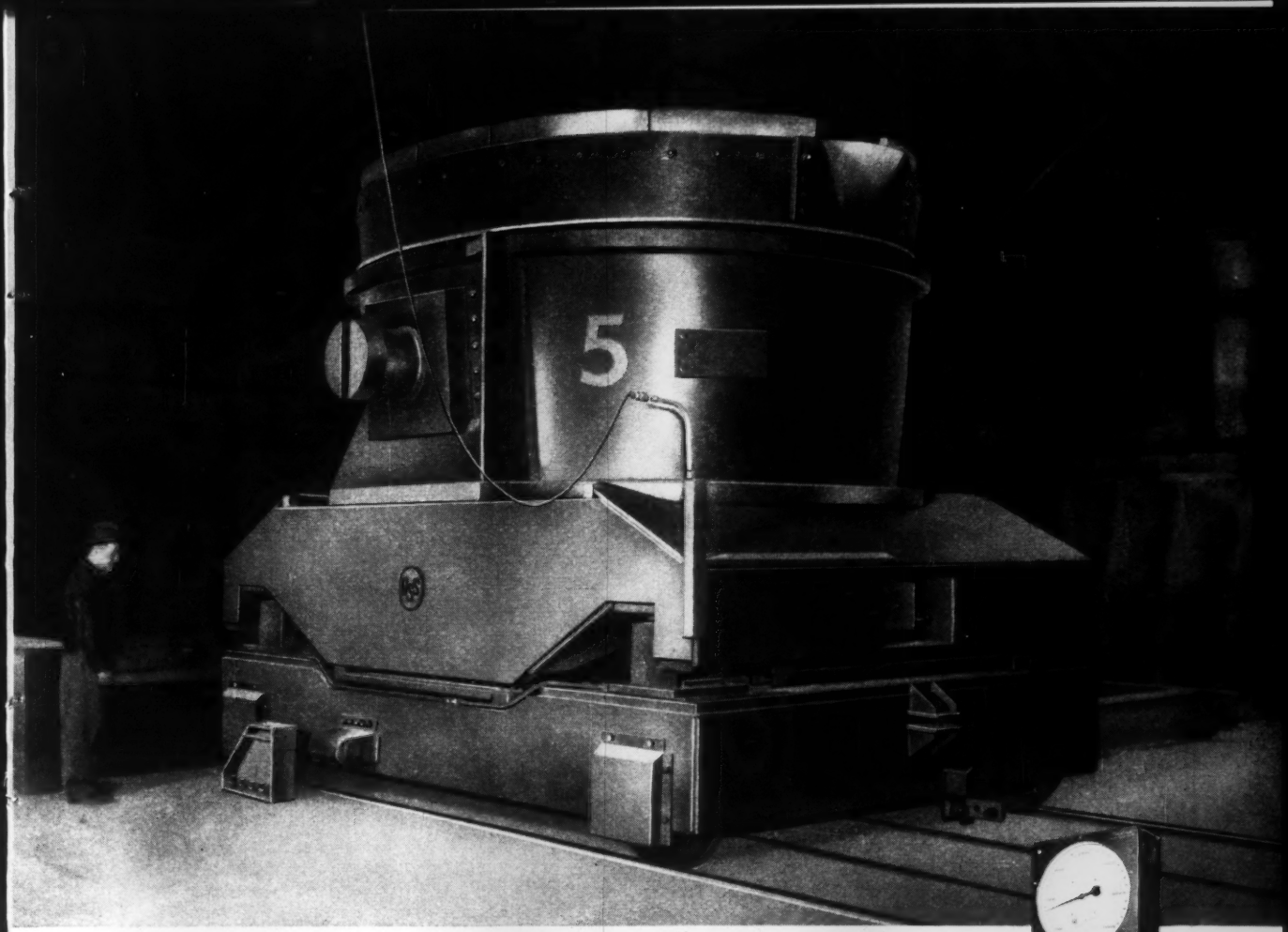
GET THIS BOOK!

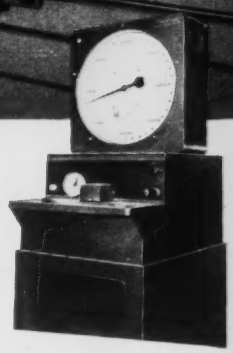
CATALOG No. 2011 gives construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.

7852 East 282nd Street, Wickliffe, Ohio

STEELWELD PIVOTED BLADE SHEARS





Weigh at any point without track scales with this Hot Metal Transfer Car

THIS Hot Metal Scale Transfer Car transports ladles of molten steel. Equipped with a hydraulic-electronic recording scale, this unique car enables one operator to record the weight of contents of the ladle at any point along the track.

Sixteen feet long, 11 feet wide, and 6 feet high (without ladle), the car is all-welded from rolled steel plate, and all welds are properly stress-relieved. It is built for operation on 9′3″-gage track, weighs approximately 59,000 pounds unladen, is designed for 100-ton ladles, and will easily carry 130 tons. A steel frame furnished with this car also adapts it to accommodate a 35-ton ladle.

The most important feature of the car is its weighing apparatus, which employs four 200,000-pound hydraulic-electronic load cells (one under each corner of the upper half of the body) that relay impulses through a trolley cable to an electronic scale located away from the heat of the ladle. This scale permits the operator to read the weight from a dial and provides him with a printed card for a permanent record. Weights thus recorded are accurate within 0.5%.

Driven by a remote-controlled car-puller, this car is fitted with splash guards, spring bumpers, and a husky tow bar. It is but one example of the many special-purpose USS Industrial Cars available for use in modern steel plants. For further information on this or any other industrial car—built to your requirements—send your inquiries to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

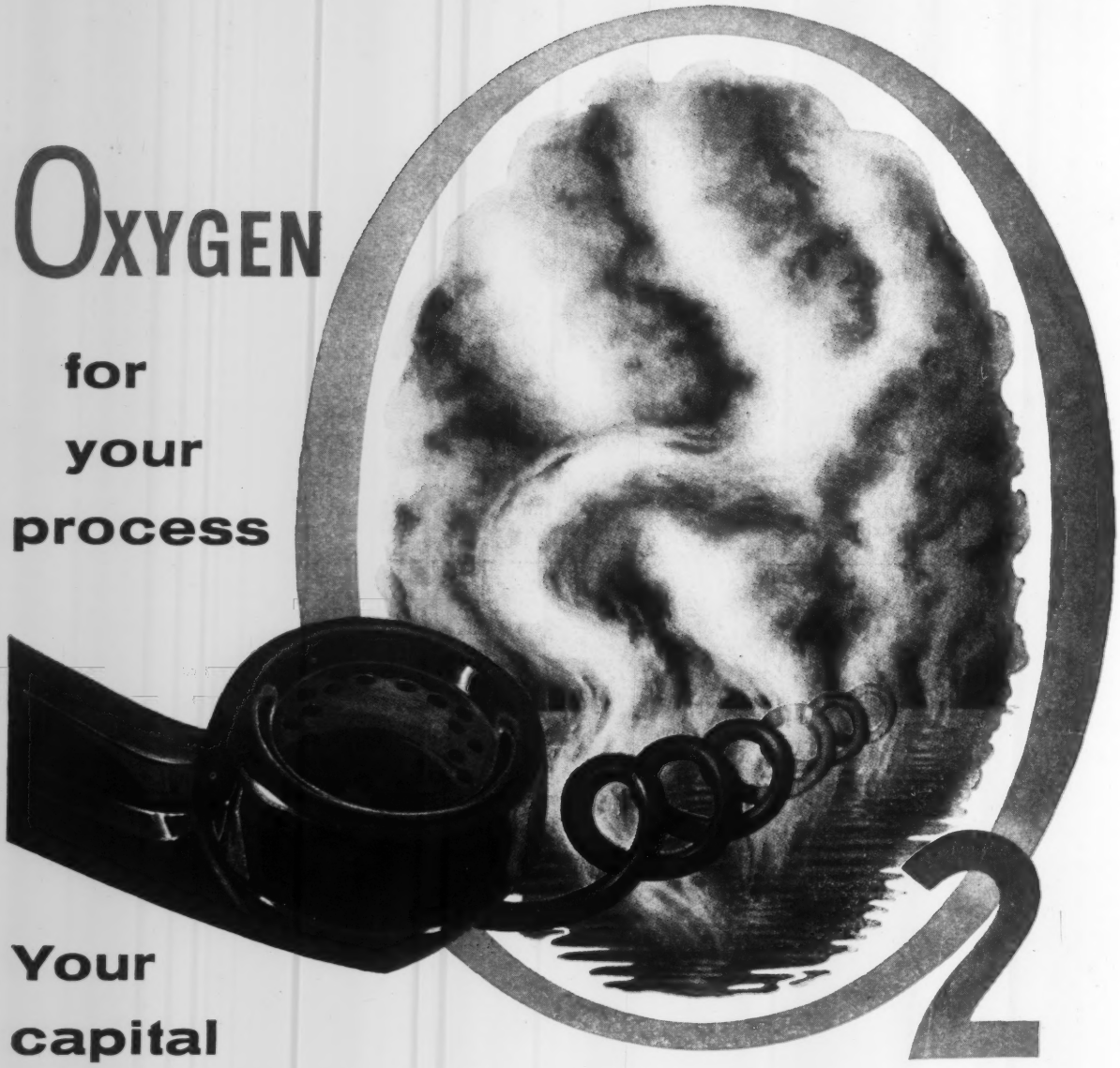
USS is a registered trademark

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Export Company

USS United States Steel

OXYGEN

for your process



Your capital investment: a phone call to LINDE

All the oxygen your process requires can be supplied economically by LINDE. You can have it in liquid or gaseous form, when and where you want it. You get the exact amounts you need in an unfailing, continuous supply. You invest nothing, and you pay only for the oxygen you use—at a contract price from LINDE.

To serve your pilot plant, LINDE will install the oxygen supply system best suited to your needs. For your laboratories or bench-scale testing, LINDE can supply liquid or gaseous oxygen by the cylinder, or just a flaskful.

Where large quantities are required, your LINDE oxygen may come from special tank cars or trucks, or directly from an on-site oxygen plant built, operated, and maintained by LINDE. Your supply will be backed up by LINDE's widespread distribution system, assuring you of a continuous flow.

Whatever your requirements, take advantage of LINDE's more than 50 years of experience in producing and supplying oxygen, nitrogen, and argon to industry. Write or phone your nearest LINDE office today! LINDE COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. Offices in other principal cities. *In Canada:* Linde Company, Division of Union Carbide Canada Limited.

When you need Oxygen—call LINDE!

Linde TRADE-MARK UNION CARBIDE

The terms "Linde" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

President Harvey Gaylord, right, discusses with Roger M. Cox, Supervisor of Buildings and Grounds, the Scott Wiper Survey that led to impressive savings at Bell Helicopter Corporation. (Without obligation, Scott will provide a survey of your plant to see whether wiper costs can be reduced.)

People buy Scott Wipers for many reasons:

Bell Helicopter saves $10,000 a year with Scott Wipers

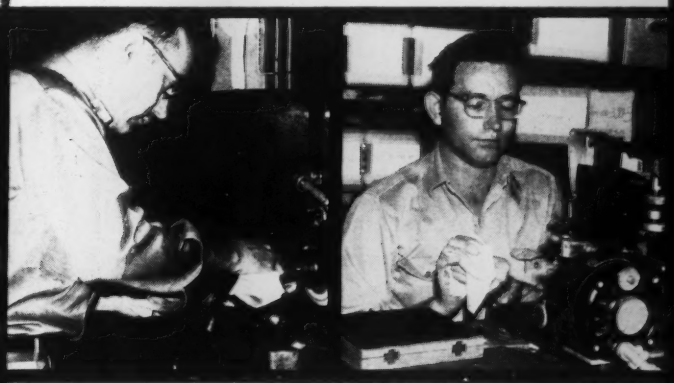
Bell, world's leading producer of helicopters since 1946, switched to Scott Wipers three years ago. Since then, Bell's average savings over the cloth rags previously used amounts to $10,000 a year.

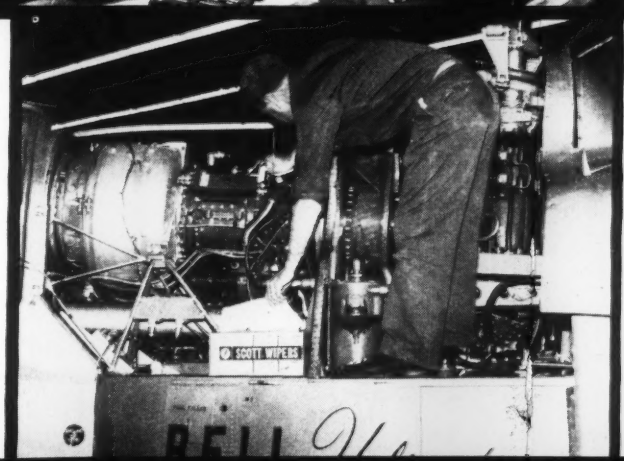
Mr. Roger M. Cox, Supervisor of Buildings and Grounds, reports: "Laundering the cloth rags was expensive. We never got a uniform batch of good cloth—texture and quality varied. Then we ran into an epidemic of rusty pins that scratched hands and faces of employees. We had several cases of infections." Employees welcomed the change to Scott Wipers—quickly learned to take advantage of their inherent qualities: freedom from lint, high-absorbency and easy disposability. Because Scott Wipers are always uniform in size and wiping capacity, Bell employees have become skillful in using them economically for maintenance and inspection operations.

SCOTT PAPER

Scott has prepared a 15-minute sound strip film on industrial wipers narrated by John Cameron Swayze. You can arrange a showing in your plant by contacting your Scott distributor. He's in the Yellow Pages under "Paper Towels." Or write: Scott Paper Company, Dept. S-89, Chester, Pa.

See "Father Knows Best" on CBS-TV.





Because they're white, Scott Wipers make it easy to detect imperfections and foreign matter when inspecting high-precision pieces.

Scott Wipers have high wet-strength—wipe off lubricating oil at gear grinders and other machine tools without tearing.

At identification number stamping operation, absorbent Scott Wipers quickly remove smudges from work piece and operator's hands.

Low unit cost of Scott Wipers provides economical engine clean-up for after-flight inspection.

meets our requirements"

Tough specifications? You bet.

That's why Maginniss Power Tool Company, leading producer of concrete vibrators, brought its tubing problems to Ohio Seamless. Our engineers recommended Ostuco NP-3 C1040 tubing for Hi-lectric Concrete Vibrator housings.

Here's what Maginniss says after using Ostuco NP-3 Tubing exclusively for 11 years, "*. . . only Ostuco NP-3 Tubing meets our requirements for abrasion resistance and easy machinability. Its fine grain structure cuts clean every time. Furthermore, we have never had a thread failure in the field traceable to tubing quality.*"

Every product, including yours, has materials or production process problems that are uniquely its own. If they involve tubing, Ohio Seamless has the answer. Just contact our nearest sales office, or the plant at *Shelby, Ohio—Birthplace of the Seamless Steel Tube Industry in America.*

AA-7477

SALES OFFICES: Birmingham • Charlotte • Chicago (Oak Park) • Cleveland Dayton • Denver • Detroit (Ferndale) • Houston • Los Angeles (Lynwood) Moline • New York • North Kansas City • Philadelphia (Wynnewood) • Pittsburgh Richmond • Rochester • St. Louis • St. Paul • St. Petersburg • Salt Lake City Seattle • Tulsa • Wichita

CANADA: Railway & Power Engr. Corp., Ltd.

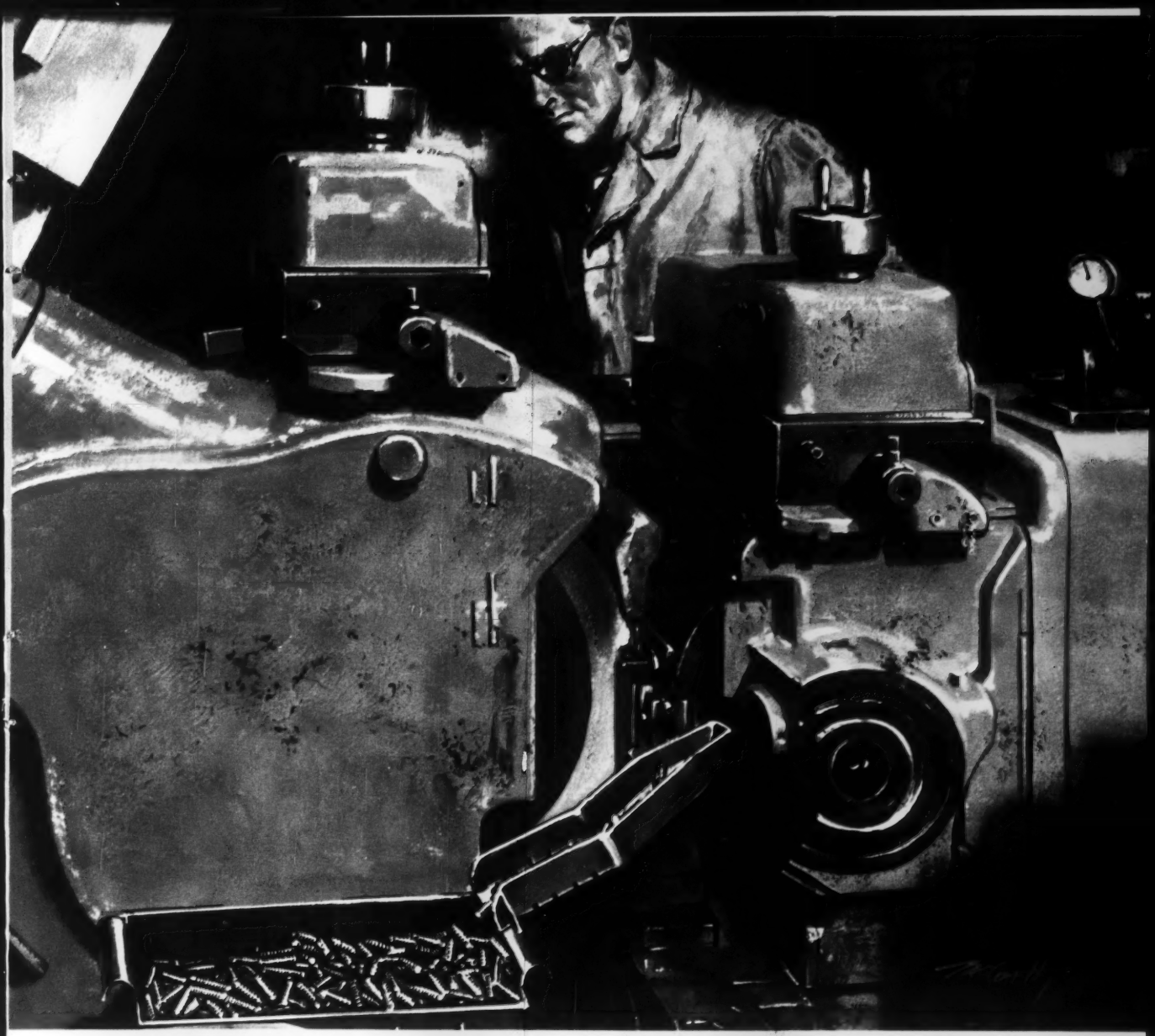
EXPORT: Copperweld Steel International Company
225 Broadway
New York 7, New York

FIFTY YEARS
OSTUCO SHELBY, OHIO
OSTUCO TUBING
1908 1958

OHIO SEAMLESS TUBE DIVISION

of Copperweld Steel Company • SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging



How 7,000 pieces per hour get the "Touch of Gold"

Here a centerless thread grinder is adding value the most modern way . . . applying the "Touch of Gold" automatically, with a Norton crush-trued wheel that is grinding threads in set screws at an average rate of 7,000 per hour.

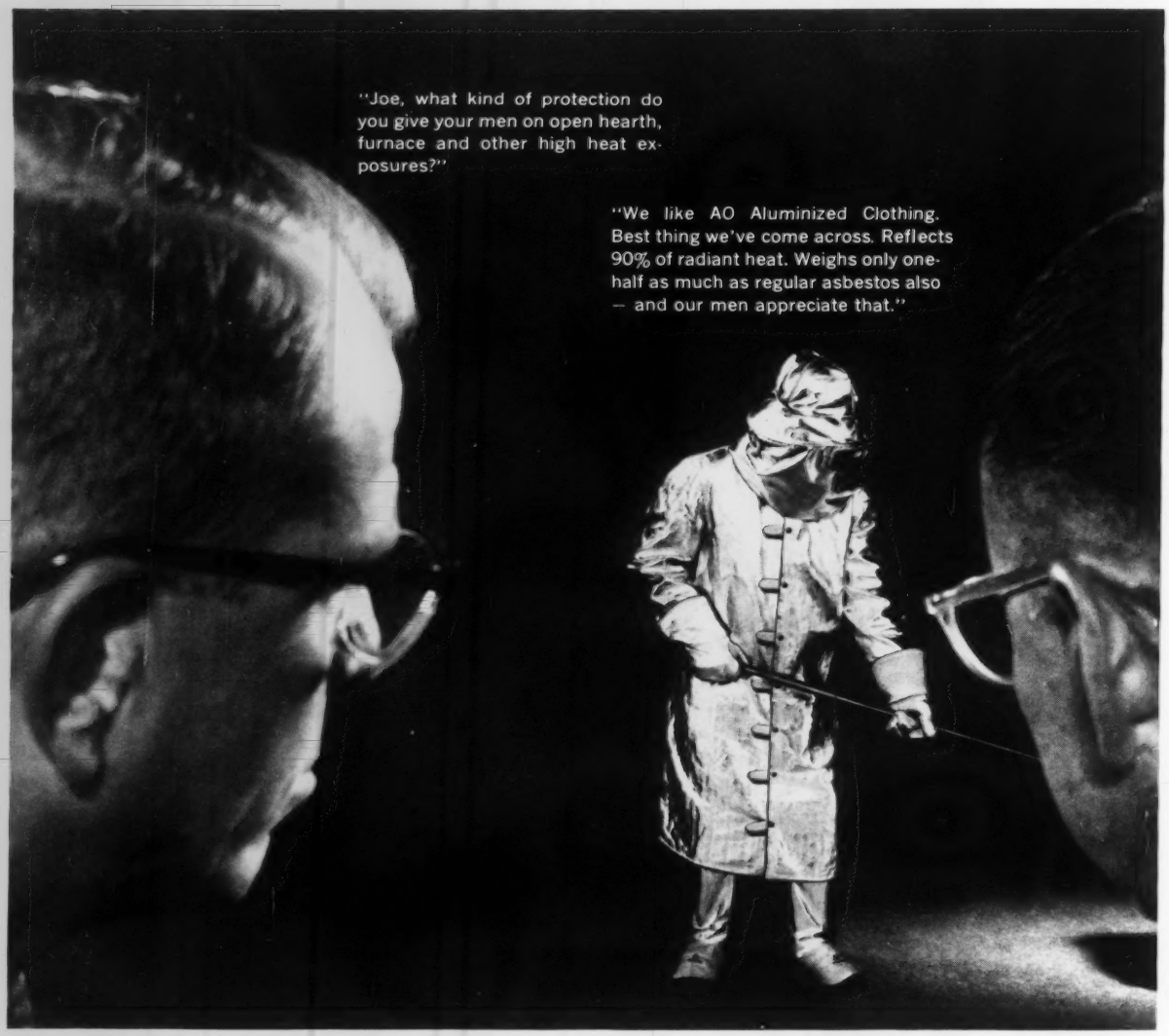
You too can benefit by Norton leadership in continually improving grinding wheels and grinding methods . . . which helps proportion your labor, overhead and wheel costs as favorably as possible, so that you can produce with increased efficiency and economy.

Norton stocks more than 200,000 types and sizes of grinding wheels . . . and brings to every industrial area the many products and services that have become synonymous with the "Touch of Gold".

NORTON COMPANY, General Offices, Worcester 6, Massachusetts.

NORTON
ABRASIVES

Making better products . . . to make your products better


"Joe, what kind of protection do you give your men on open hearth, furnace and other high heat exposures?"
"We like AO Aluminized Clothing. Best thing we've come across. Reflects 90% of radiant heat. Weighs only one-half as much as regular asbestos also — and our men appreciate that."

HIGH HEAT PROBLEMS?

Take a Tip from These Safety Directors!

Yes and AO Aluminized Clothing is a very serviceable material. It's flexible and will not peel or crack under normal conditions. Aluminized *asbestos* protects against molten metal splash — Aluminized *duck* is recommended only for protection against radiant heat. The line is complete — from hoods to foot protection including gloves and mittens.

All garments are equipped with reflective metal fasteners, anchored through double thicknesses of material. Leather pull tabs on coats for quick release. Wool collars. All seams are double stitched. Plenty of room for freedom of motion.

Aluminized Asbestos is lightweight herringbone asbestos — Aluminized Duck is flameproofed 10 oz. cotton duck.

AO Aluminized *Asbestos* is recommended for electric furnace tapping, metal pouring, molten glass and similar exposures as well as open hearth and blast furnace operations. Your nearest American Optical Safety Products Representative can supply you.

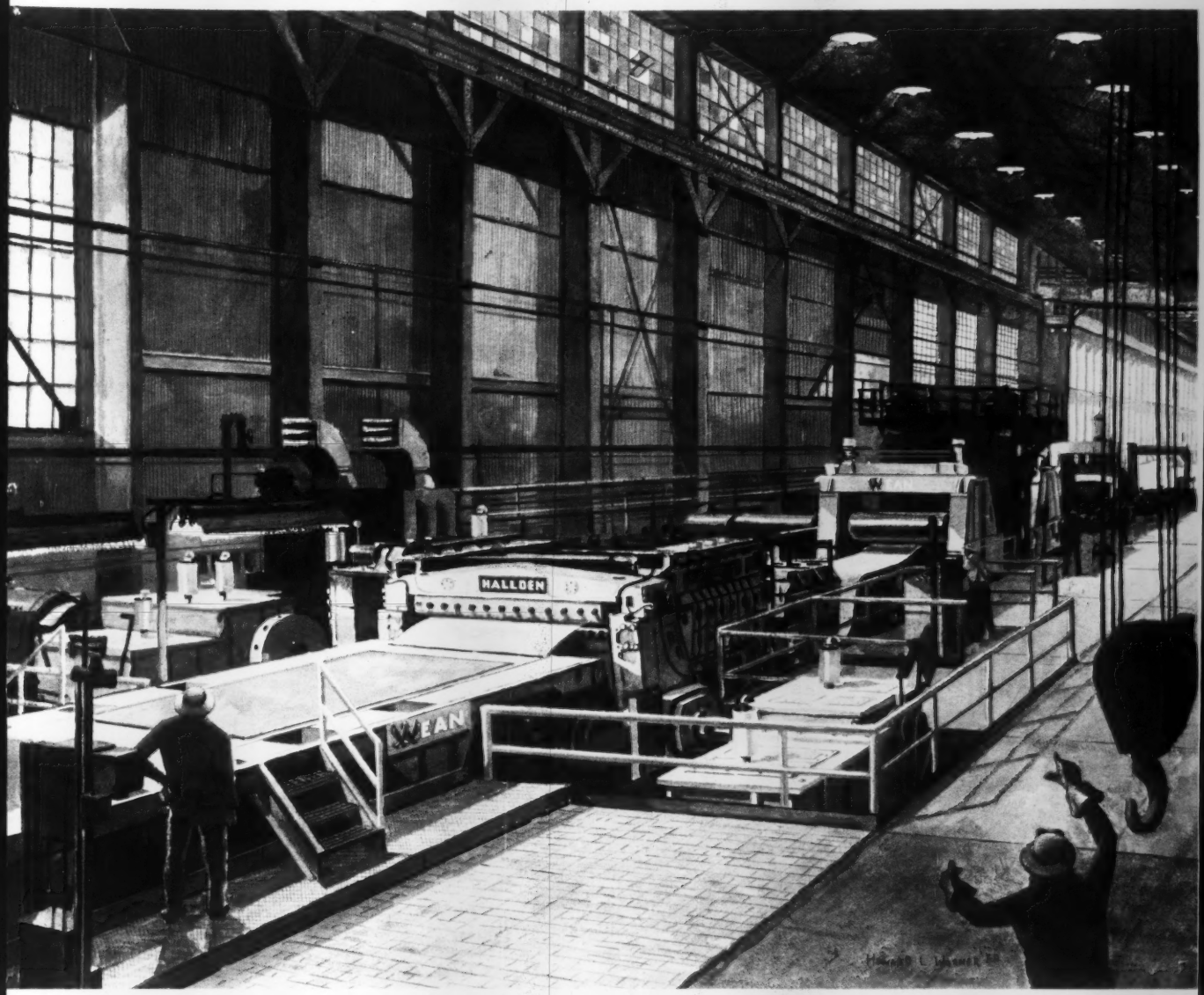
Always Insist On AO Trademarked Safety Products

American Optical COMPANY
SAFETY PRODUCTS DIVISION

SOUTHBRIDGE, MASS.
Safety Service Centers in Principal Cities

1833—1958 • 125 LEADERSHIP YEARS

Wean, "J & L" and Shearing . . .

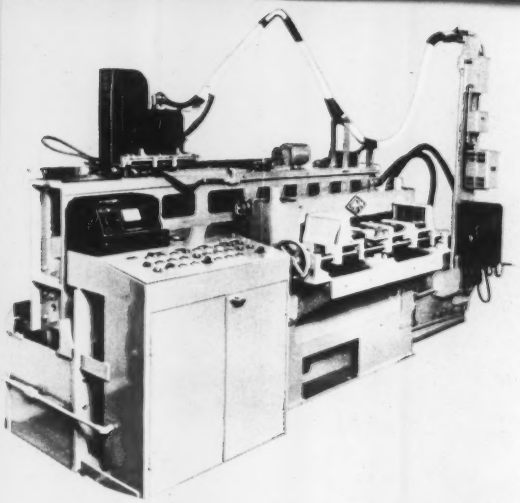


This Wean-Hallden Combination Hot Rolled Shearing Line can best be described as "unique, precise and versatile." Unique . . . since it incorporates a flying shear that will shear strip up to ¼" thick and 74" wide at high speeds with great accuracy. Precise . . . since it is a line engineered of the highest quality components into an automatic production unit of top efficiency. Versatile . . . since its many combinations of shearing, recoiling, slitting, edge trimming and temper passing can produce a great many steel products.

THE WEAN ENGINEERING COMPANY INC. • WARREN • OHIO

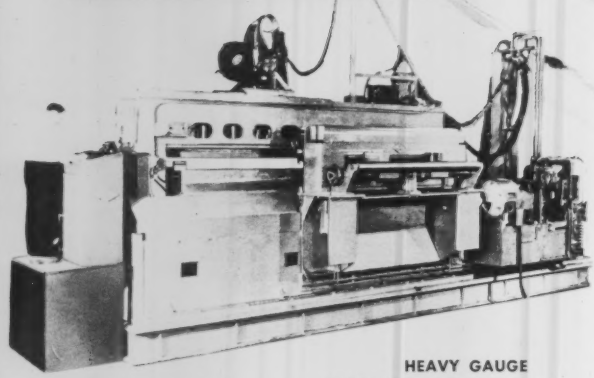
595

THE NEW MPM Shear Welder



CONTINUOUS SILICON SHEET PRODUCTION

Shearwelder for coil build up line for 42" wide Silicon Steel from .015" to .030" thick.



HEAVY GAUGE STAINLESS PRODUCTION

Shearwelder for butt welding 60" wide x .250" thick Stainless Steel.

.....more automation for even faster Steel Production!

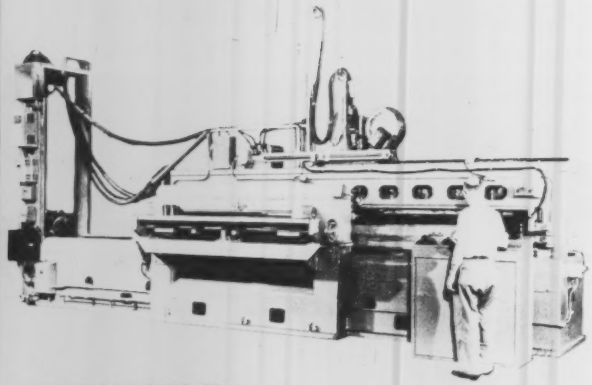
Metal Processing Machine Company's new Shearwelders are outstanding because of their advanced design incorporating automatically sequenced operations.

Shearing and welding are performed at the same station with positive clamping right at the work area, thereby insuring perfectly aligned butt welds.

"M.P.M." welds are **extremely ductile**, permitting subsequent rolling, forming, or blanking operations. Weld joints are smooth and require **no trimming**.

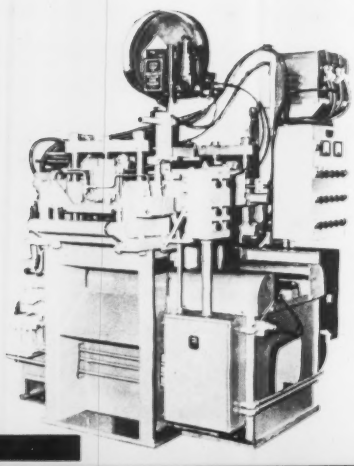
Rugged construction is insurance for minimum maintenance and compact design saves floor space.

THE METAL PROCESSING MACHINE CO.
SUBSIDIARY OF THE McKAY MACHINE CO.
YOUNGSTOWN, OHIO



MAJOR COIL BUILD UP

Shearwelder for Carbon Steel coil build up line for .015" to .060" thick x 72" maximum width.

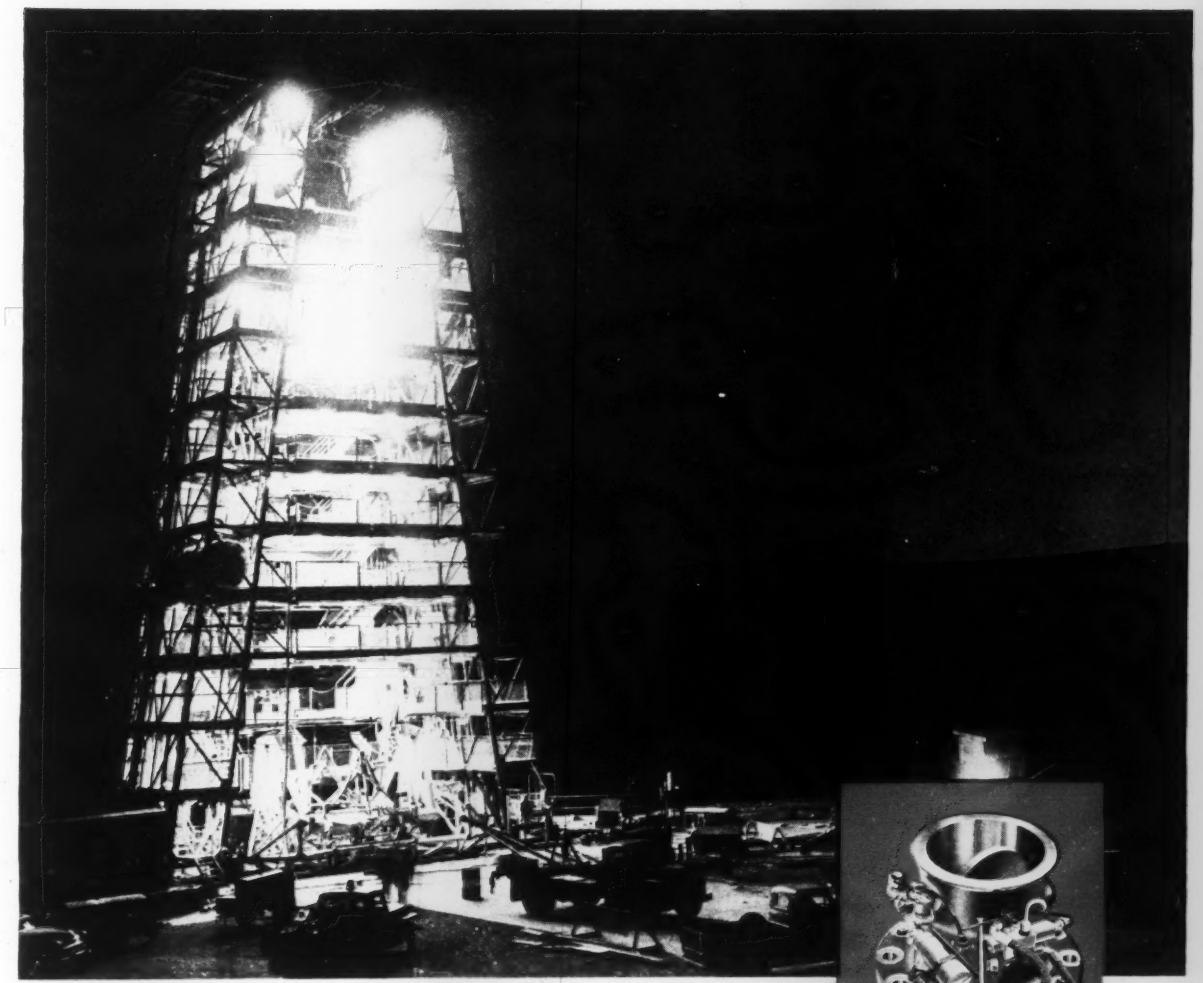


McK MPM

CONTINUOUS TUBE MILL PRODUCTION

Shearwelder used with strip looping device for splicing coil to coil to permit continuous production of tube mill.

10065



Atlas missile test tower

MISSILE LAUNCHING VALVE COST REDUCED 30% WITH ESCO CASTING

Problem: Fabricating high pressure gas tank butterfly valve bodies for missile component manufacturer Convair-Astronautics, San Diego, California, proved unsatisfactory. Consisting of wrought stainless steel flanges and tubes welded together and machined, valve costs were high. Weld seams were susceptible to intergranular corrosion and gas leakage. This was a critical installation as these units had to withstand test temperatures ranging from −65° to 500° F., at 2,000 vibrations per second and at stresses up to 15 gravity units.

Solution: The valve body was redesigned as a casting. One-piece design alloy steel improved strength and corrosion resistance and practically eliminated the danger of gas leakage. *ESCO* centrifugal casting technique permitted casting six 180-pound valve bodies simultaneously. Resulting savings in material and labor amounted to 30 per cent of previous costs.

You can simplify your design problems by calling an ESCO engineer today.

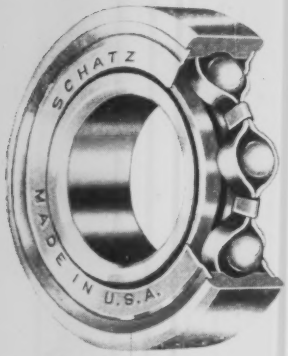
ESCO®

ELECTRIC STEEL FOUNDRY COMPANY

2160 N. W. 25TH AVE. • PORTLAND 10, OREGON
MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Cities.
ESCO INTERNATIONAL, NEW YORK, N. Y.
IN CANADA ESCO LIMITED

Name your load and speed combinations...

Schatz makes the most varied line of Ball Bearings to fit your needs



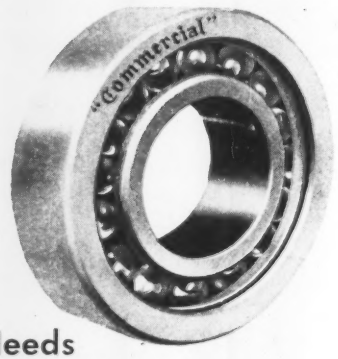
"Functional Precision" Ball Bearings—BR series

One piece race type with ball cage. Designed to give all the precision you require under certain ratios of load, speed and life expectancy. Available in open type, single or double shielded, single or double sealed with Schatz patented low friction plastic seal. Or with one shield and one seal on special order.

23 sizes from $^{3}/_{16}$" to 1"—6 types in each size + specials

"Commercial" Ball Bearings

The most complete and varied line anywhere.



UNGROUND BALL BEARINGS "TYPE A"—Every standard type—radial, thrust and radial thrust.

GROUND BALL BEARINGS "TYPE B"—Used and recommended where greater accuracy and smoother running qualities are needed and where loads are heavier and speeds higher.

1033 sizes to match your Bearing Application Needs

FILL IN AND MAIL

We'll fit these bearings—or special types and sizes to your special needs. Just fill in your application problem below—attach to your letterhead and mail.

THE SCHATZ MANUFACTURING COMPANY, Poughkeepsie, N. Y.
Here's our bearing problem. What do you suggest?

APPLICATION_____

LOAD (radial, thrust or both)_____

SIZE_____

SPEED_____

LIFE FACTOR_____

OPERATING CONDITIONS_____

SPECIAL CONDITIONS_____

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

SCHATZ
BALL BEARINGS

Amusement park operators* know that their rides must be exciting to be successful. But with the lives of riders and onlookers at stake, operators rely on *quality* wire rope to ensure . . .

a safe ride

Safety comes first, wherever wire rope is used. You may save a few pennies on the purchase of a "bargain" rope. But it will cost you *more* than you bargained for, if it results in injured personnel and wrecked equipment. Make sure you get *quality* wire rope—buy Wickwire Rope.

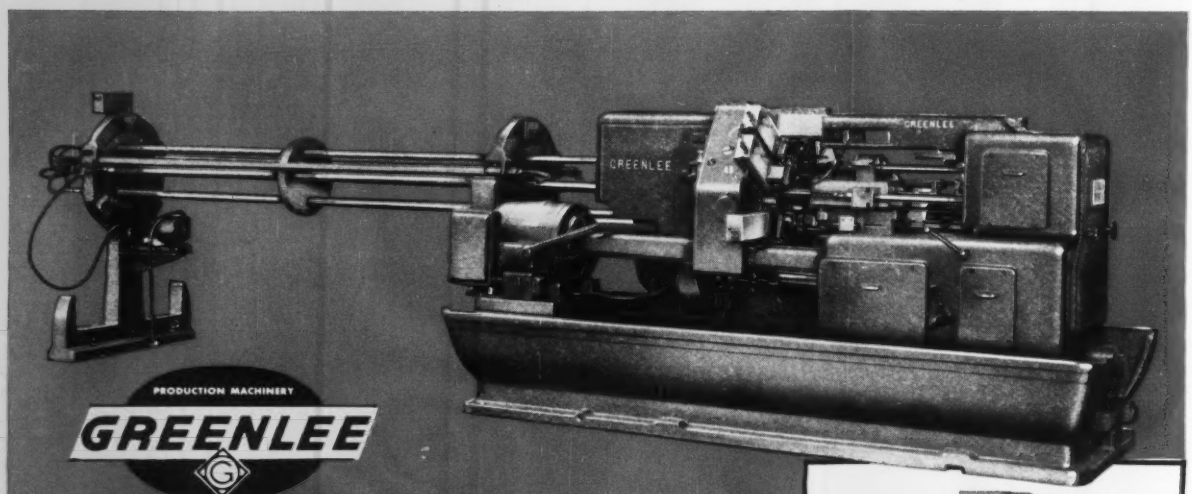
**Picture shows the Rocket Ride at Palisades Amusement Park, Fort Lee, N. J. Wickwire Rope provides the only support for each of these planes.*

CF&I WICKWIRE ROPE A CF&I PRODUCT

LOOK FOR THE YELLOW TRIANGLE

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver El Paso • Farmington (N. M.) • Fort Worth • Houston • Kansas City • Lincoln • Odessa (Tex.) • Oklahoma City Phoenix • Pueblo • Salt Lake City • Tulsa • Wichita • **PACIFIC COAST DIVISION**—Los Angeles • Oakland • Portland San Francisco • San Leandro • Seattle • Spokane • **WICKWIRE SPENCER STEEL DIVISION**—Boston • Buffalo • Chattanooga Chicago • Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia 6347



PRODUCTION MACHINERY

GREENLEE

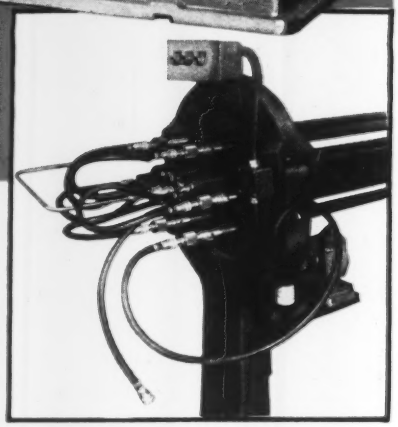
MULTIPLE FEED-OUTS...

A Natural

on Greenlee Air-Feed Automatics

Feed Out Stock to 16½"

Eliminate Pushers and Feed-Out Cams



Removable fittings attach air lines to the stock reel tubes. A vacuum pump withdraws the piston when restocking. Push-button control panel is provided for starting and stopping.

Greenlee Air-Feed Automatics offer you a 3-way profit advantage:

1. Maintenance and change-over time is reduced by eliminating stock pushers, feed tubes and feed-out cams.
2. Stock can be automatically air-fed to position in one or more machining stations permitting two or more pieces per cycle.
3. Multiple feed-out flexibility enables you to finish machine a variety of pieces that ordinarily demand costly second operation setups.

If you are running into production headaches on a specific job, Greenlee may be able to adapt an "Air-Feed" to solve your problem. See your Greenlee Distributor.

Write for your copy of Catalog A-405 — first step on the way to more profitable production with Greenlee Automatic Bar Machines.

• • •

Greenlee Standard and Special Machine Tools

Multiple-Spindle Drilling and Tapping Machines

Transfer-Type Processing Machines

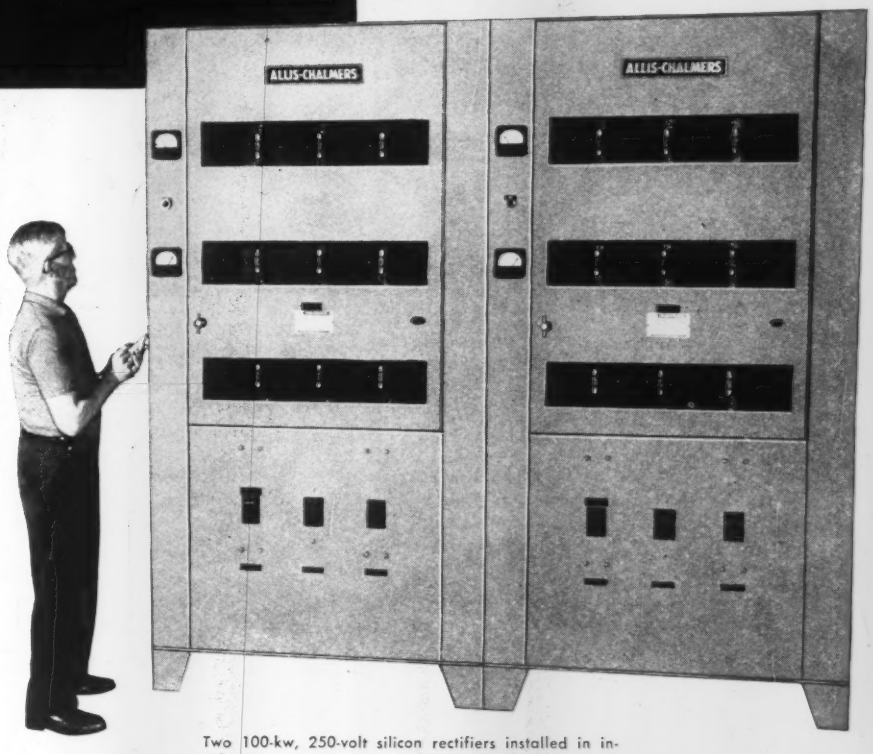
Six and Four-Spindle Automatic Bar Machines

Hydro-Borer Precision Boring Machines

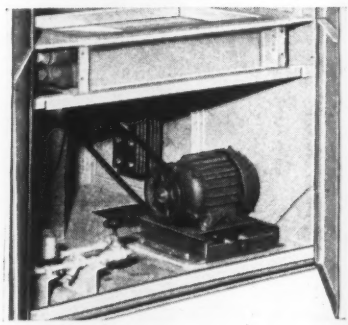
GREENLEE BROS. & CO.

1929 MASON AVE. ROCKFORD, ILL.

SEMI-CONDUCTOR RECTIFIER



Two 100-kw, 250-volt silicon rectifiers installed in industrial service. Semi-conductor rectifiers are simple in operation and maintenance, require little floor space.



Effective cooling — closed recirculating air system features air-to-water heat exchange and delivers same amount of cooling air to each diode. Air is sealed in. Direct air cooling system also available.

Only application experience like this can give you highest conversion efficiency

High power conversion efficiency at low cost is the major advantage of the semi-conductor rectifier. But this high efficiency — as high as 95% — can be obtained only when the unit is *correctly applied*.

Allis-Chalmers 30 years of experience in developing, manufacturing and *applying* rectifiers assures you of the highest conversion efficiency. This background of experience, plus vast research and engineering facilities, is available for a thorough analysis of your requirements. Then, specific, unbiased equipment recommendations are made — dictated solely by your requirements — because Allis-Chalmers makes all types of rectifiers.

Every semi-conductor rectifier installed by Allis-Chalmers has performed to the complete satisfaction of the user. Your local A-C man can tell you how a semi-conductor rectifier can be applied profitably to your operations. Call him. Or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

A-5817

DU PONT REG. U.S. PAT. OFF.

PRODUCT NEWS

QUESTIONS FROM THE FLOOR are answered during a Du Pont cost-analysis seminar by technical representatives George Hetrick and Dave Haring (left to right). Fred Low, technical service manager of Du Pont's Chlorine Products Division, stands by as moderator. Cost-analysis specialists are featured speakers at Du Pont Cost Seminars.

Unique Du Pont seminars point up advantages of cost analysis in metal cleaning

As an extra service for their customers, distributors of "Triclene" D trichlorethylene are scheduling seminars conducted by Du Pont metal-cleaning specialists. The purpose of these meetings is to give metal fabricators like yourself helpful information about modern metal-cleaning methods and a basis for comparing them.

High point of the seminars is a detailed discussion of Du Pont's new cost-analysis service. This is a method of accounting, based on accepted principles, that helps you determine the complete cost of your present cleaning operation . . . pinpoint out-of-line costs and show how they can be reduced. This new service can help you improve your current operation or help you select the most efficient process if you're planning to expand.

You can get full details about the seminars and cost-analysis service through your distributor of Du Pont "Triclene" D trichlorethylene. He works hand in hand with Du Pont technical representatives to bring you the best metal cleaning available at lowest possible cost. Get in touch with him today, or mail coupon at right.

Answers to questions most frequently asked at the Du Pont cost seminars:

Q. Your cost analysis sounds fine, but how am I going to get the basic information needed? I don't keep a fine breakdown of cleaning costs.

A. We have recently prepared information that will give you all the instructions you need for making a cost analysis. Included are data for obtaining estimates when you need them. Also, Du Pont technical men are always available to help you.

Q. Do all trichlorethylenes have the same effect on cleaning costs?

A. Not at all! "Triclene" D contains an *exclusive* combination of neutral stabilizers that virtually eliminates rejects and permits easier, less frequent degreaser cleanouts. Naturally, these factors have a definite influence on metal-cleaning costs.

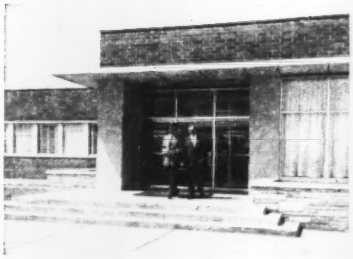
Q. Why has Du Pont spent the time and money to establish this cost-analysis service?

A. For two reasons. First, an accurate method for analyzing metal-cleaning costs has long been needed in this field. Du Pont, pioneer of vapor degreasing with synthetic solvents, is in the best position to offer this needed service. Second, we believe that in most cases we can prove to you that vapor degreasing is more economical than alkali washing for metal cleaning. If we can, and if you choose our "Triclene" D trichlorethylene, we *both* stand to profit.

Q. Anything new coming up in vapor degreasing?

A. Yes, indeed. A process now finding commercial acceptance combines degreasing and painting in the same degreaser. A further advance still in the development stage integrates phosphatizing between degreasing and painting.

FOR MODERN METAL CLEANING



New laboratory houses plant-scale equipment for demonstration and customer service.

New DuPont laboratory helps your distributor provide more service

A phone call to your "Triclene" D distributor will make available outstanding technical service from a Du Pont Solvents Technical Representative. Service that's yours without obligation. What's more, this service is now given extra support by the facilities provided at the new Du Pont Sales Technical Laboratory at Wilmington, Delaware.

Your Du Pont Solvents Technical Representative is up to date on the latest developments in the field. He works closely with your "Triclene" D distributor and together they can keep you posted, provide you with useful literature on improving your metal-cleaning operation. Remember, it's their job to keep your degreasing setup at peak efficiency.

Want more facts about vapor degreasing with "Triclene" D? Free booklet tells how vapor degreasing works, shows types of equipment, points out many cost-saving advantages. Just mail coupon for your copy

cut out and save

Use this handy check list for evaluation of metal-cleaning processes

You'll find the chart below helpful in selecting a metal-cleaning process for your new plant or to replace existing outworn equipment. Engineers who consider all of the factors listed frequently find that the speed, flexibility, quality and economy of vapor degreasing make it the best answer to their cleaning needs. Your local Du Pont Solvents Technical Representative will be glad to help you evaluate vapor degreasing in light of your requirements. You can arrange to have him call through your distributor of "Triclene" D trichlorethylene or through the local office of the Electrochemicals Department. Arrange for a call today!

	VAPOR DEGREASING	ALKALI WASHING	EMULSION CLEANING
SOILS—Can it readily remove?			
1. Stamping and machining oils	Yes	( )	( )
2. Most polishing and buffing compounds	Yes	( )	( )
3. Drawing compounds	Yes	( )	( )
4. Quenching oils	Yes	( )	( )
5. Water-emulsion cutting oils	Yes	( )	( )
6. Shop dirt	Yes	( )	( )
7. Paints	Many	( )	( )
METALS—Can it clean thoroughly without etching?			
1. Steel	Yes	( )	( )
2. Aluminum	Yes	( )	( )
3. Other nonferrous metals	Yes	( )	( )
4. Plastics	Many	( )	( )
OTHER MAJOR CONSIDERATIONS			
1. Fast cleaning action?	Yes	( )	( )
2. High capacity—low investment?	Yes	( )	( )
3. Good penetration into recesses?	Yes	( )	( )
4. Soil redeposition?	None	( )	( )
5. Foaming problems?	None	( )	( )
6. Do parts emerge dry?	Yes	( )	( )
7. Handle all shapes and sizes?	Yes	( )	( )
8. Waste-disposal problem?	None	( )	( )
9. Utility requirements?	Low	( )	( )

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department S-9, Wilmington 98, Delaware

- ☐ Please send me your booklet on vapor degreasing.
- ☐ Please send me more information on your new cost-analysis method.
- ☐ Please have your representative call for an appointment.

*Name*_____ *Position*_____

*Present method of cleaning*_____

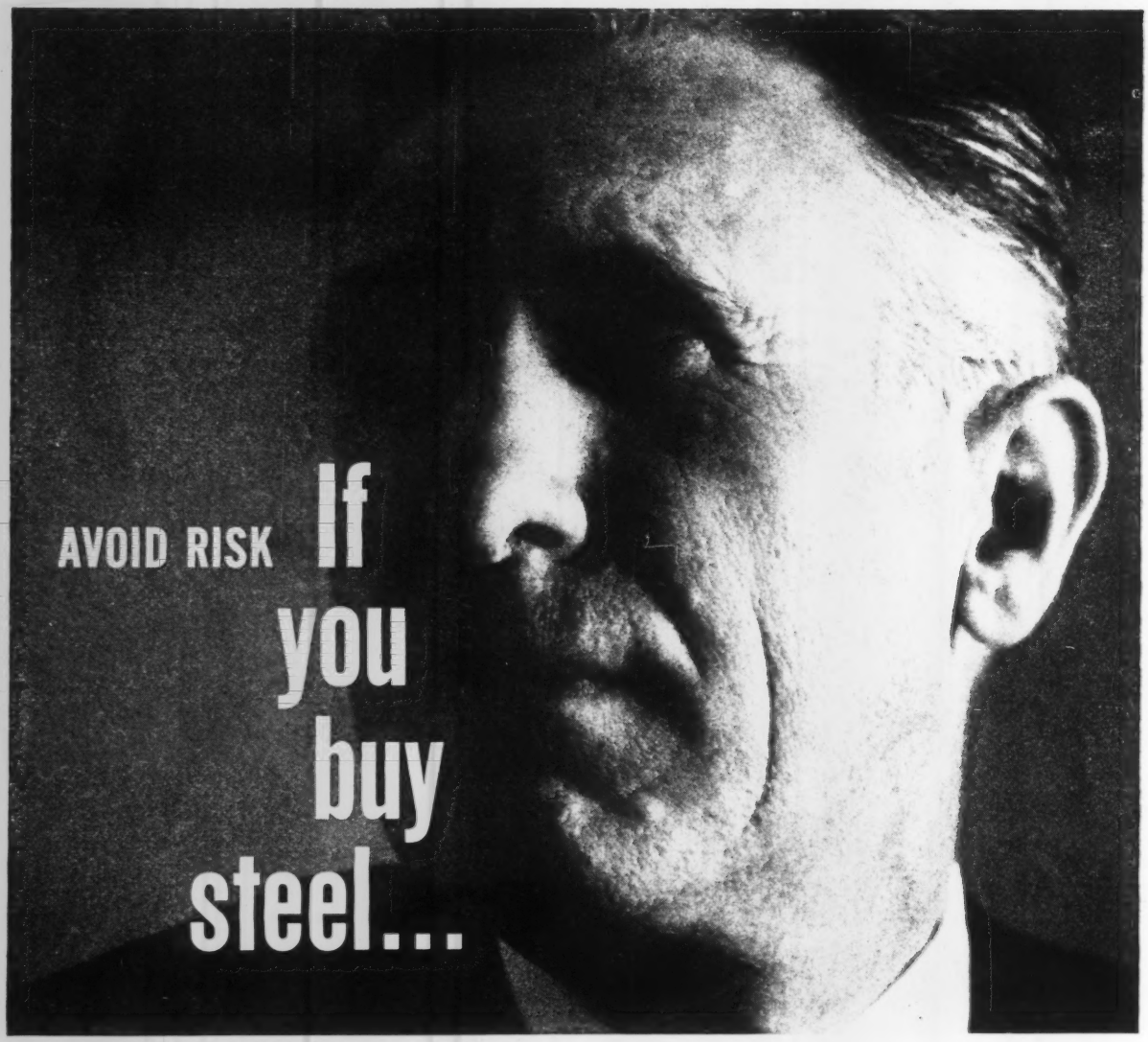
*Firm*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY



USE OUR CAPITAL to cut your storage space costs

Using our large steel stocks saves you the costs of a big chunk of expensive storage space. And you can free-up and convert this tied-up space to more productive, profitable use. That's good business.

Since our labor, our equipment cuts your steel, does preliminary processing for you . . . you save the investment—the costs—of using your own labor and equipment. You save handling expense and other inventory costs. Whatever your steel need, there's a nearby Steel Service Center set up to serve you quickly from stock.

If you're putting steel in your inventory because you think it's a bargain, compare *all* of your costs of possession with the cost and *freedom-from-risk* of buying steel from your Steel Service Center. Use this chart. Or, to be more precise, get the booklet, "What's your real cost of possession for Steel" from your convenient Steel Service Center. American Steel Warehouse Association, 540 Terminal Tower, Cleveland 13, O.

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered	
Cost of capital:	
Inventory	
Space	
Equipment	
Cost of operation:	
Space	
Materials handling	
Cutting & burning	
Scrap & wastage	
Obsolescence	
Insurance	
Taxes	
TOTAL	

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

Per ton, cut-to-size, and delivered

TOTAL

AMERICAN STEEL WAREHOUSE ASS'N

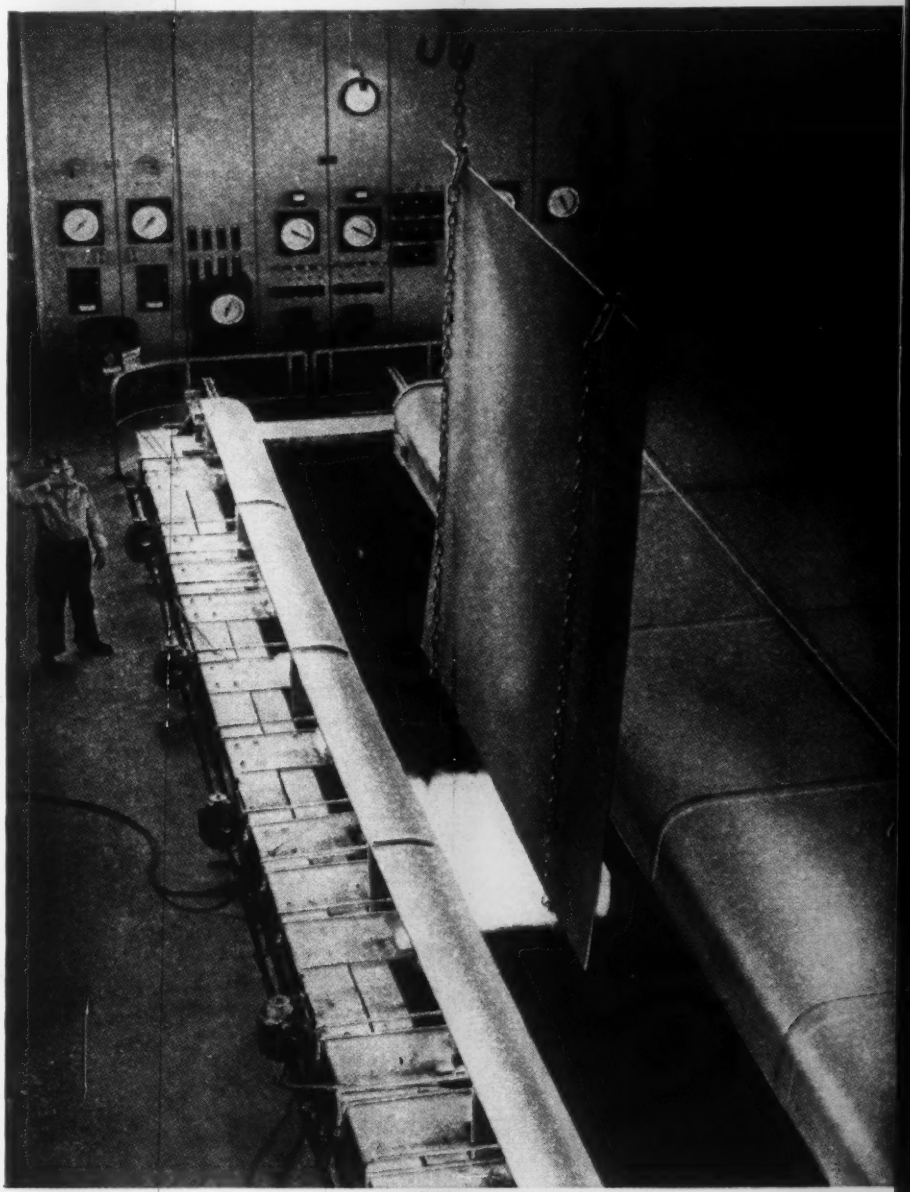
The American Steel Warehouse

...YOUR STEEL SERVICE CENTER

When you need

BASIC CHEMICALS FOR METALS

look to General Chemical!



Here's why...

At practically every stage of metal-making and metal-working, you will find need for basic chemicals produced by General Chemical. These chemicals are readily available from a nation-wide network of plants and conveniently located stock points. You're sure of uniform quality, prompt deliveries, and experienced technical service whenever you need it. So specify *General* for all these basic chemicals:

Sulfuric Acid
Hydrochloric (Muriatic) Acid
Nitric Acid
Hydrofluoric Acid
Sodium Fluoride
Sodium Bifluoride
Trisodium Phosphate
Sodium Metasilicate
Oxalic Acid
Fluoboric Acid
Potassium Fluoborate
Sodium Fluoborate
Ammonium Fluoborate
Lead Fluoborate
Tin Fluoborate
Copper Fluoborate
Iron Fluoborate
Nickel Fluoborate
Cadmium Fluoborate
Baker & Adamson® Laboratory Reagents

Basic Chemicals for American Industry

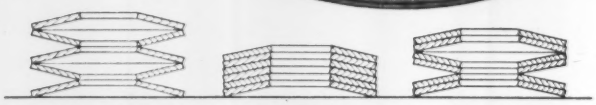
Allied Chemical

GENERAL CHEMICAL DIVISION

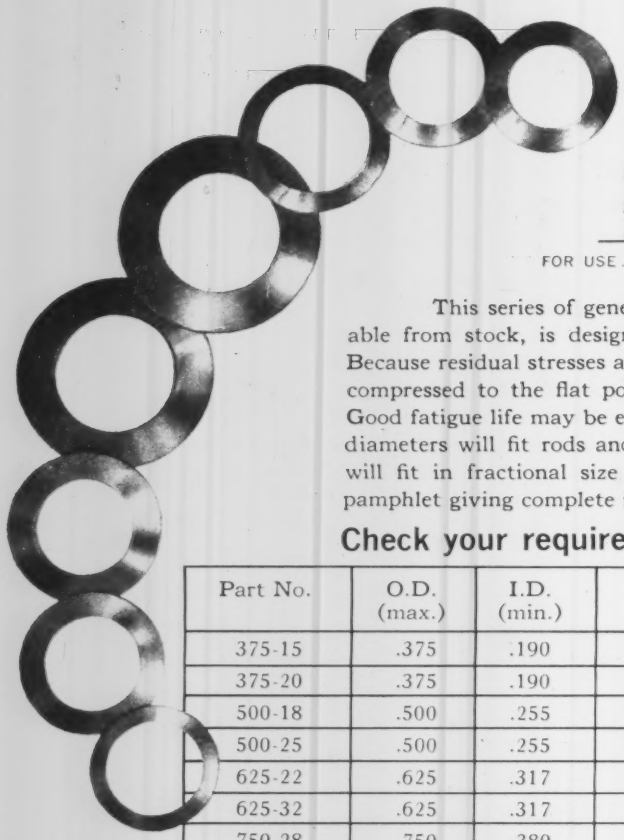
40 Rector Street, New York 6, N. Y.

Now . . . IN STOCK for prompt shipment

BELLEVILLE WASHERS



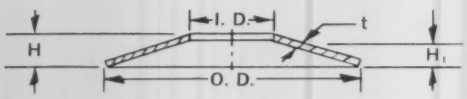
FOR USE . . . . IN SERIES . . . . . IN PARALLEL . . . . IN PARALLEL-SERIES



This series of general-purpose belleville washers, all of which are available from stock, is designed primarily to carry high loads in limited space. Because residual stresses are introduced during manufacture the washers can be compressed to the flat position and released without loss of free cone height. Good fatigue life may be expected between slight preload and "H_1". The inside diameters will fit rods and bolts of fractional sizes and the outside diameters will fit in fractional size holes. Prices on request. Send for stock washer pamphlet giving complete information.

Check your requirements against these stock sizes

Part No.	O.D. (max.)	I.D. (min.)	t	H (approx.)	H_1	P_1 ±10%	P*
375-15	.375	.190	.015	.027	.021	35	55
375-20	.375	.190	.020	.030	.025	60	110
500-18	.500	.255	.018	.034	.026	45	70
500-25	.500	.255	.025	.038	.031	95	160
625-22	.625	.317	.022	.042	.032	70	105
625-32	.625	.317	.032	.048	.040	145	260
750-28	.750	.380	.028	.051	.039	110	175
750-40	.750	.380	.040	.059	.049	235	415
1000-35	1.000	.505	.035	.067	.051	175	260
1000-50	1.000	.505	.050	.075	.062	340	600
1250-40	1.250	.630	.040	.082	.061	230	330
1250-62	1.250	.630	.062	.092	.077	475	870
1500-45	1.500	.755	.045	.093	.069	284	400
1500-72	1.500	.755	.072	.107	.089	665	1180



*P Calculated Load at Flat Position

5840

Associated Spring Corporation

General Offices: Bristol, Connecticut

Wallace Barnes Division, Bristol, Conn. and Syracuse, N. Y.
B-G-R Division, Plymouth and Ann Arbor, Mich.
Gibson Division, Chicago 14, Ill.
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IBM'S PROBLEM:

Plate many different small parts *without mixing!*

UDYLITE'S ANSWER:

CLUSTER BARRELS . . . for faster, greater production!

At the International Business Machines Corporation, Electric Typewriter Division plant, at Lexington, Ky., many different small parts had to be plated and processed uniformly . . . without mixing. Conventional methods proved too slow, costly and inaccurate. Then, IBM discussed the problem with Udylite.

Out of this discussion came the Udylite Cluster Barrel—developed specifically for the plating and processing of many different minute parts simultaneously . . . *and doing it without mixing!*

Also, because of the gentle tumbling action of the work in each barrel, IBM is now able to plate tiny, fragile parts that heretofore had to be racked, thus saving thousands of dollars each year.

And, the excellent agitation of the solution that results from the orbit struck by each barrel, plus the definite replenishing of the solution makes the Udylite Cluster Barrel the ideal answer for such a problem.

In addition to the multiple cluster illustrated, Udylite now offers 12, 8 and 4 barrel units for plating any number of small and medium sized parts. These cluster combinations are indispensable for anyone engaged in the production plating or processing of business machines, radios, electrical and electronic items.

If processing of small batches or volume plating *without mixing* is a problem in your shop contact your local Udylite salesman now. He can show you how Udylite Cluster Barrels can be *your* answer, too! Call him today or write direct to:

the **udylite** corporation

detroit 11, michigan • world's largest plating supplier

Experience**—the added alloy in **A-L Stainless, Electrical and Tool Steels

Allegheny Ludlum knows more about stainless than anybody . . . and puts it in print for you

Allegheny Ludlum *should* know more about stainless than anybody: they've been the leading producer of all forms for more than 40 years. And the industry's only that old.

Today, A-L produces more different sizes, shapes, finishes and alloys of stainless than any other company. Backing up its quality products are research and development facilities with people second to none.

With know-how and experience gained over the years, Allegheny Ludlum keeps little of it secret: it offers the most complete selection of literature available anywhere.

Literature, designed to help you learn more about Allegheny Stainless and how it can improve your product, is just one help offered by Allegheny Ludlum. You also get the best assistance from trained salesmen and technicians, ready to help you on your specific problem.

All this service is available through your Allegheny sales engineer. Call him today. Or, as a starter, write for the publication list describing the over 150 technical pieces made to assist you.

Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa. Address: Dept. S-9A.

WSW 7122

ALLEGHENY LUDLUM

for warehouse delivery of Allegheny Stainless, call RYERSON

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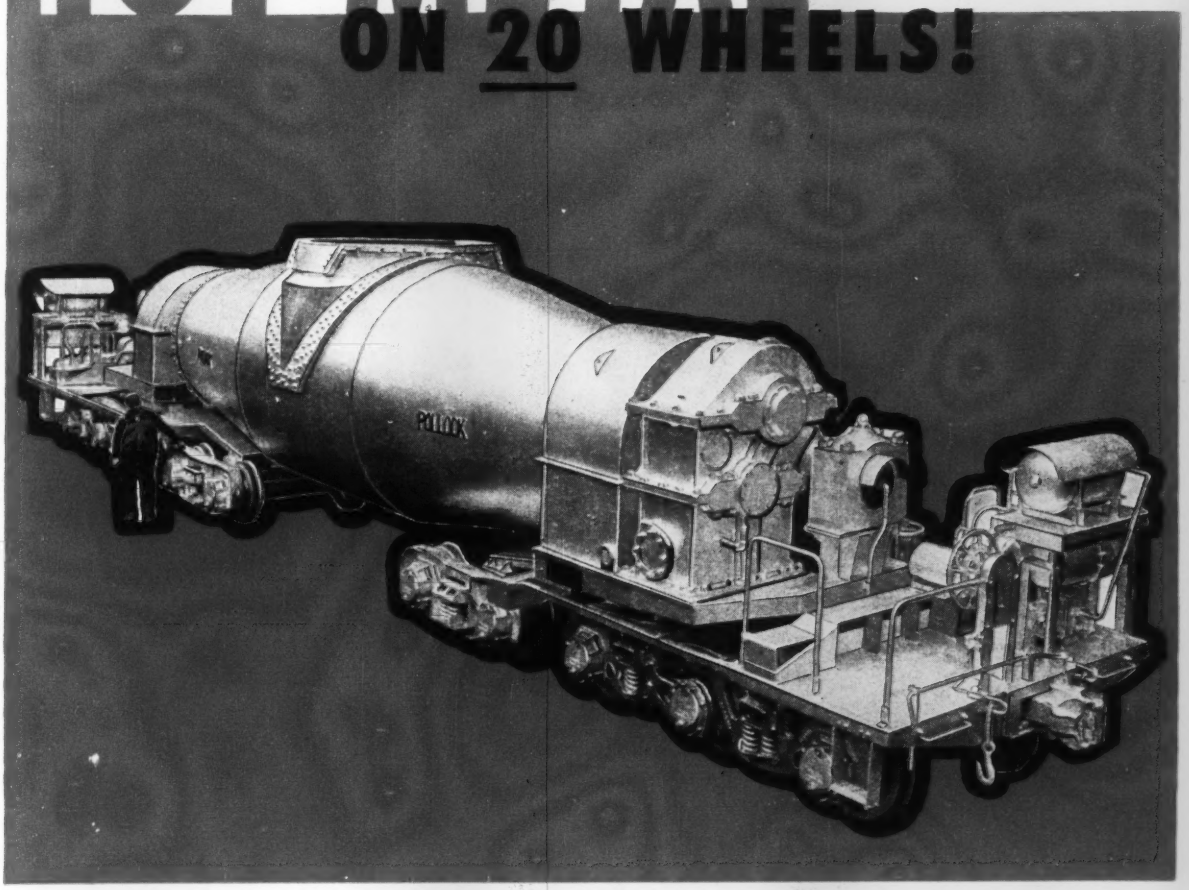
EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT

HOT METAL ON 20 WHEELS!



another first by POLLOCK

THIS particular 20-wheel Pollock Hot Metal Car was built to meet the specific requirements of an eastern steel works plant layout. Pollock engineers designed this car with sufficiently reduced wheel loadings so as to transport 150 tons (an increase of more than 75 tons) across an existing old bridge with sharp curved approaches.

Lower operating costs start from the ground up. Pollock is singularly equipped to deal with all phases of hot metal car engineering and construction. The skill and knowledge of Pollock engineers as related to actual steel mill operating conditions are the keys to Pollock efficiency of operation.

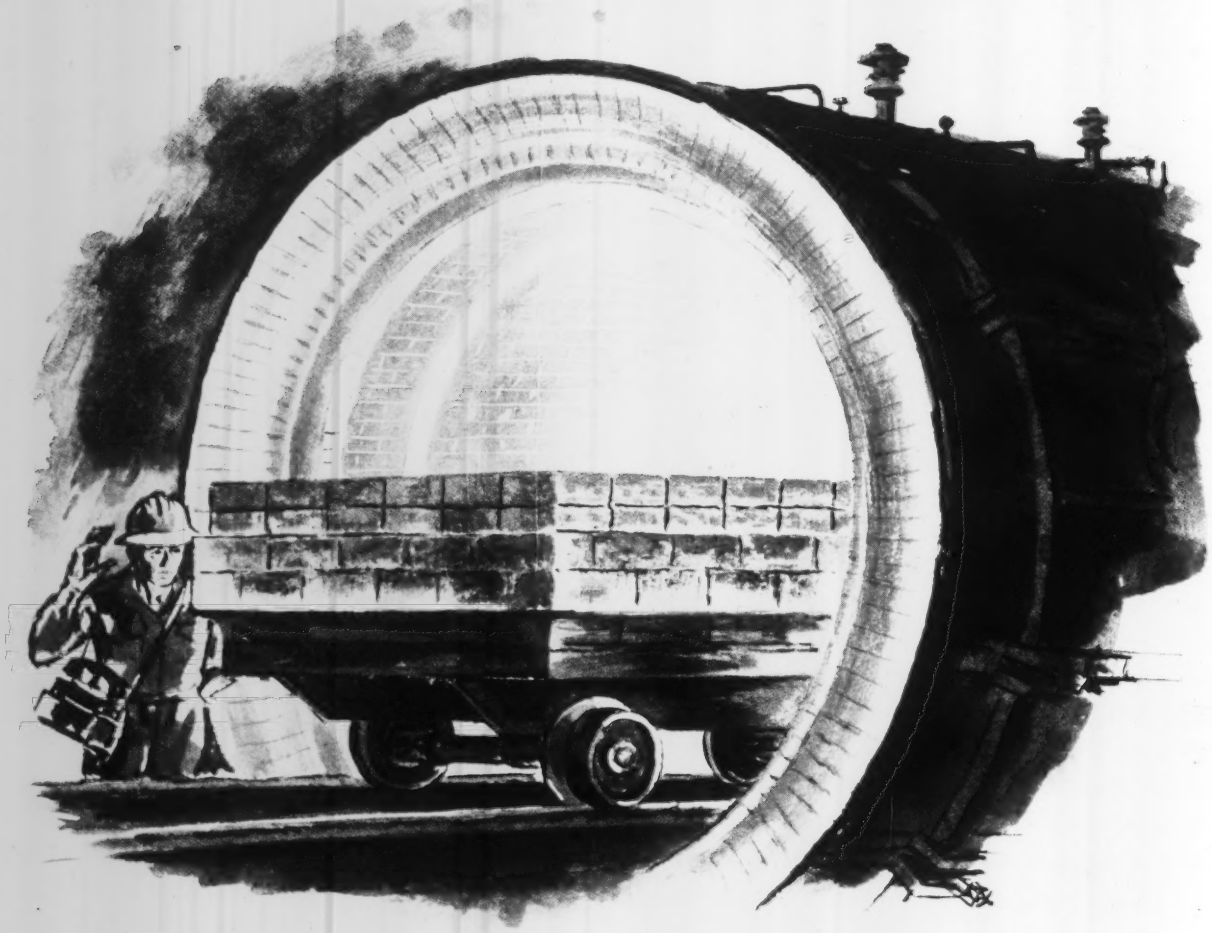
Investigate this newest of hot metal cars . . . call Pollock today.

POLLOCK
SINCE 1863

THE WILLIAM B. POLLOCK COMPANY
YOUNGSTOWN, OHIO
Associated in Great Britain with Ashmore, Benson, Pease & Co.

ENGINEERS, FABRICATORS AND ERECTORS OF BLAST FURNACE STEEL WORK
. . . HOT METAL AND SLAG HANDLING EQUIPMENT FOR . . .
BLAST FURNACE, OPEN HEARTH AND ELECTRIC FURNACE PLANTS

Electromet . . . *Making metals do more all the time!*



Metals find a new future in a vacuum!

Only a vacuum inside this giant furnace permits the high purification that makes possible many amazing new metals and alloys. This furnace at ELECTROMET's Marietta, Ohio, plant is over 100 feet long—largest of its kind ever built. It produces new high-purity chromium and manganese metals and very low-carbon ferrochromes which are major factors in the lower costs and improved properties of stainless steels and high-temperature alloys.

Vacuum processes also make possible the production and fabrication of capacitor-grade tantalum, reactor-grade columbium, and vanadium metal. These metals now make significant contributions to the aircraft, electronic, missile, and nuclear industries.

ELECTROMET scientists and engineers continually work toward further advancement in vacuum technology. At the same time, they develop new and useful alloys and metals . . . find practical solutions to customers' problems in using ferro-alloys.

Want to know more about recent developments in the field of vacuum-quality alloys and metals? ELECTROMET can help.

ELECTRO METALLURGICAL COMPANY, *Division of Union Carbide Corporation*, 30 East 42nd Street, New York 17, N. Y.

Electromet
FERRO-ALLOYS AND METALS

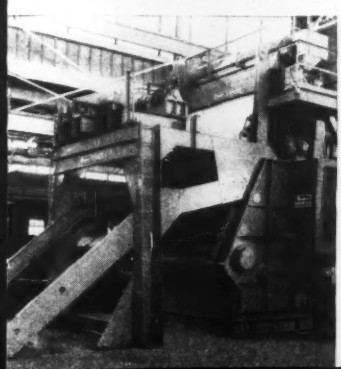
UNION CARBIDE

The terms "Electromet" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

BUILT BIG . . . TO CLEAN BIG

Giant Pangborn unit Rotoblasts loads up to 12,000 lbs. in minutes!

A side view of the 72 cu. ft. Pangborn Rotoblast Barrel. Pangborn Barrels available in 1½, 3, 6, 12, 18, 20, 32, 72 and 102 cubic foot sizes.



How do you build a giant blast cleaning barrel? If you're Pangborn, you use steel, inches thick. You put in the heaviest apron conveyor ever made. You incorporate the patented abrasive separator, abrasive-tight door, simplified Pangborn construction. You power it with two Rotoblast wheels that hurl *64 tons of abrasive an hour.*

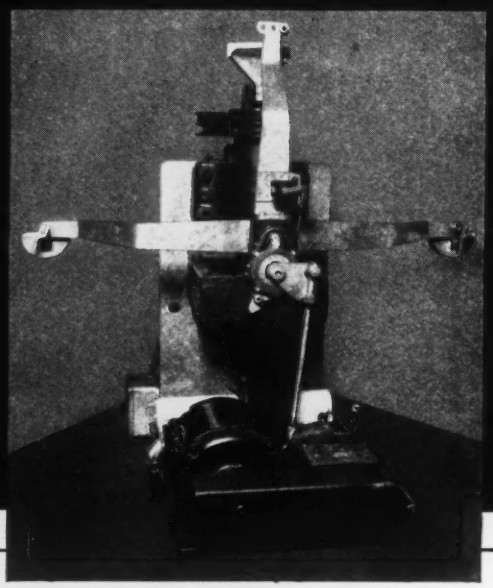
Sure, it's tough to build . . . but it's worth it when you come up with a 72 cu. ft. Pangborn Rotoblast® Barrel! This unit cleans 6-ton loads *in five minutes* and gives the lowest operating and maintenance costs in the blast cleaning field! It's one of many Pangborn Rotoblast Machines. There's one for *your* problem.

The Pangborn Engineer in your area will be glad to take off his coat and go to work on your cleaning problem at no obligation. And, for more information, write for Bulletin 227 to Pangborn Corp., *1600 Pangborn Blvd., Hagerstown, Md. Manufacturers of Blast Cleaning & Dust Control Equipment.*

Clean it fast with Pangborn ROTOBLAST

CLEVELAND is the name and the place for ABRASIVES

Why not buy Abrasives on Fact?



Here at Cleveland, we feel that a buyer of metallic abrasives should be able to do just that.

The breakdown tester we use is shown herewith, and it's designed to separate the fact from the fiction.

After 100 passes through this tester, at 7200 r.p.m., we *know* how good our abrasives are and how long they will last.

This tester, combined with our other extensive laboratory equipment, is an integral part of our production control system.

All of it, of course, is working hard every day to give you top-quality, long-life, economical Metallic Abrasives . . . based on fact.

There are more details in our catalog, which is yours for the asking.

COMPARATIVE TEST REPORT

MATERIAL TESTED — S660 CHILLED IRON SHOT

A - Cleveland Metal Abrasive B - Competitors C - Competitors

SCREEN ANALYSIS

U.S. No.	S.A.E. Spec.	A	B	C
8	0	0	0	0
10		35.5	54.0	36.0
12	85	60.3	36.2	48.0
14	12	4.2	7.7	14.0
Pan	3	0	1.1	2.0

CHEMICAL ANALYSIS

	A	B	C
T.C.	2.72	3.29	2.42
Si	1.13	1.36	1.20
Ph	.056	.380	.130
Mn	.40	.36	.47
S	.128	.176	.141

Rc HARDNESS

	A	B	C
Low	58	59	57
High	62	65	62
Average	60	63	59

BREAKDOWN TEST

Thru U.S. No. 10 on U.S. No. 12 — No. of Grams Tested—100 — 100 Passes at 7200 R.P.M.

	A	B	C
12	0	0	0
14	2	0	.1
16	4	0	.5
18	4.8	.1	3.5
20	15.6	.2	9.4
25	24.4	7.9	20.7
30	13.5	8.4	12.1
35	9.9	10.6	11.5
40	4.1	11.3	6.0
45	2.7	7.1	4.6
50	2.0	14.2	3.4
Pan	13.7	27.6	17.8
Loss	8.7	12.6	10.4

Remarks — C.M.A. material best by test. B.M.

CLEVELAND ABRASIVES

1. Realsteel Shot and Grit 2. Pearlitic Malleable 3. Normalized
4. "A" Iron 5. Hi-Strength "B" 6. Chilled Iron 7. Drawn Steel

World's Largest Producer of Metallic Abrasives

CLEVELAND metal abrasive co.

General Office: 888 East 67th Street • Cleveland 8, Ohio

Plants at: Howell, Michigan; Toledo; Cleveland; Northfield, Ohio

designed and built by . . .

UNITED®

HIGH SPEED
5-STAND
TANDEM COLD MILL

UNITED

ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

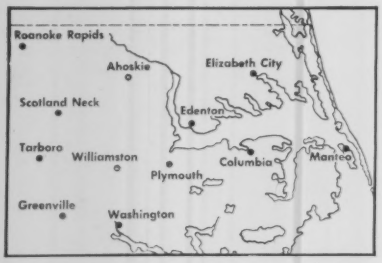
Plants at Pittsburgh, Vandergrift, Youngstown, Canton, Wilmington

SUBSIDIARIES: Adamson United Company, Akron, Ohio
Stedman Foundry and Machine Company, Inc., Aurora, Indiana

Running The Bounds . . .

of a future site for your new plant

KEYSTONE CORNER
OF **NORTH CAROLINA**



North Carolina's great historical romancer, Inglis Fletcher, tells how land records were kept in colonial days. "Each year, the old men showed the boundaries as they remembered them to younger men. They, in turn, showed the lines and marks to youths of sixteen and seventeen . . ." And the ceremony ended in feasting and dancing under the stars.

Today, these same lands, in North Carolina's northeastern corner are among America's choicest industrial locations. For the State is rich in resources. It's among the top four producers of mica, talc, titanium and ten other important minerals. Its forests hold vast reserves of hard and soft wood. Its farms yield abundant agricultural products.

North Carolina has what you need. Manpower? The state home-grows two workers for every one who moves or retires. Transportation? Three major railroads and many truck lines serve this area, which lies close to the great ports of Hampton Roads. Electric power? VEPCO's generating capability of 1,531,900 kilowatts will reach 2,171,900 by 1960!

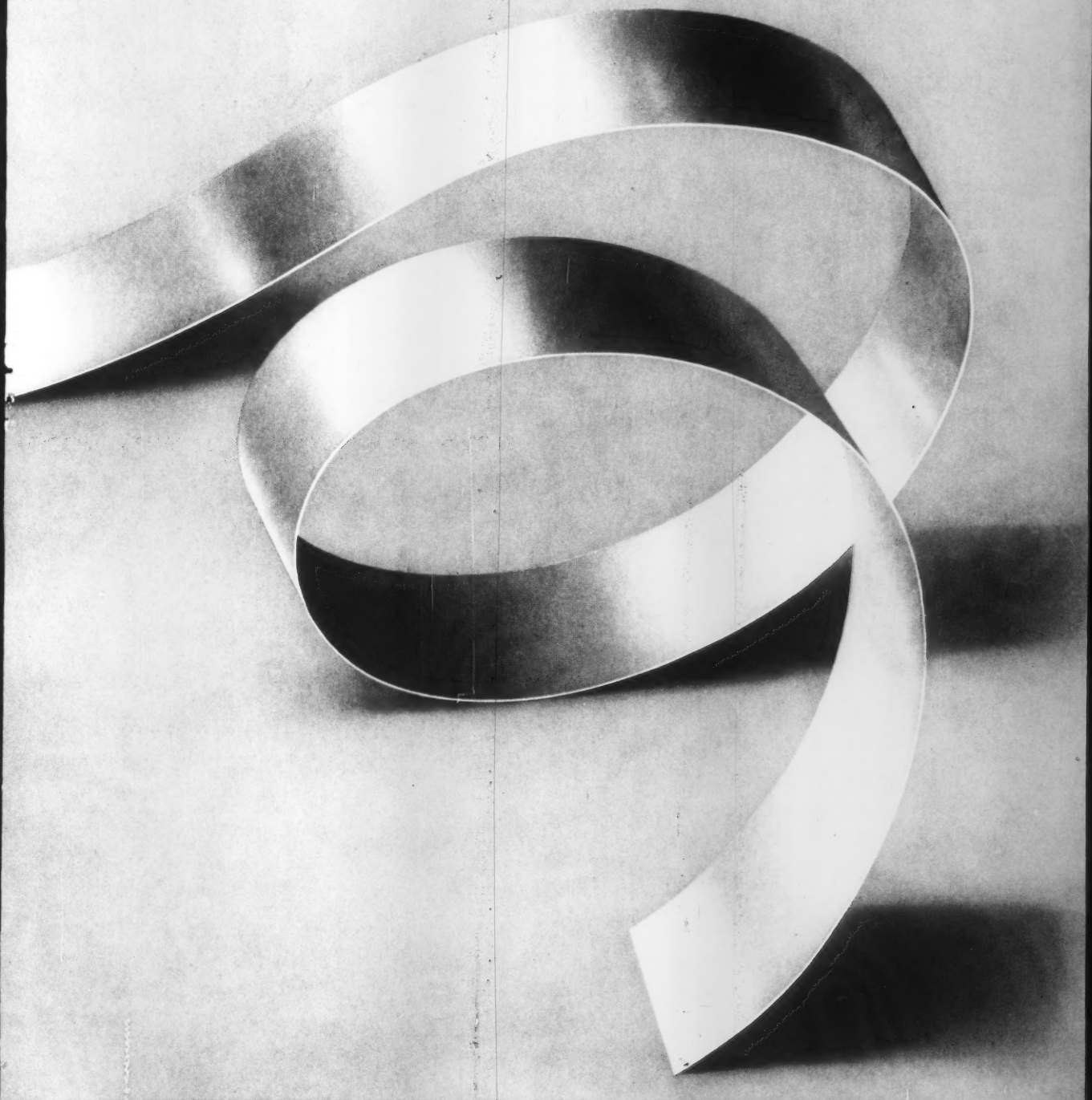
For confidential site-finding help in this land of mild climate, fine water, friendly people and government . . . contact VEPCO, serving "The Top of the South" in North Carolina, Virginia and West Virginia.

VIRGINIA ELECTRIC and POWER COMPANY

Clark P. Spellman, Director — Area Development, Electric Building, Richmond 9, Virginia • Phone: MIlton 9-1411

stainless strip—as you like it

Are your requirements for quality and finish in stainless strip being met? As Crucible makes it, it's rolled to your precise specifications—and produced with a finish that is truly lustrous. Not only that, Crucible ensures uniform metallurgical quality by methodically checking each heat—and makes certain of uniform gauge with electronic measuring controls on the most modern rolling equipment. Next time you need stainless, consider Crucible—a major producer of stainless in all gauges down to .010" and in all widths. Write to *Crucible Steel Company of America, Dept. S115, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*



CRUCIBLE STEEL COMPANY OF AMERICA

Canadian Distributor — Railway & Power Engineering Corp., Ltd.

Missing Something?

The Answer is Pink!

Switch to PINK CIMCOOL

Stay on top of every situation with CIMCOOL° S2 Concentrate, world's largest selling chemical cutting fluid. Float along comfortably, sure that your cutting problems are cushioned by this radically new and different coolant. Switch to CIMCOOL and relax, because CIMCOOL does all this—

CIMCOOL LOWERS COSTS because it's longer lasting in machines. Therefore, it reduces downtime and cuts labor costs for cleaning and changing.

CIMCOOL PERMITS FASTER SPEEDS and feeds, because of its chemical lubricity. It combines friction reduction and cooling capacity in a degree never before attained by old fashioned lubricants.

CIMCOOL IS CLEANER TO USE because it doesn't soil hands or clothing. It contains no skin irritants. And it's safer because it leaves no slippery film on shoes, floor, machine or work. It can't smoke, can't burn and virtually eliminates rancidity and foul odors.

So *swim* with the tide of people who are switching to CIMCOOL. Call your CIMCOOL Distributor today. He'll be glad to give you full information on all the advantages of CIMCOOL concentrate—as well as details on the entire family of CIMCOOL Cutting Fluids. Or contact us direct and we'll have one of our Cincinnati Milling Machine trained machinists call on you—without cost or obligation, of course. Write, wire or phone Sales Manager, Cincinnati Milling Products Division, Cincinnati 9, Ohio.

CIMCOOL CUTTING FLUIDS

CIMCOOL **S2 Concentrate**—The famous pink fluid which still covers 85% of all metal cutting jobs. Effective, economical and clean.

CIMPLUS—The transparent grinding fluid with exceptional rust control. Also used for machining cast iron and as a water conditioner with CIMCOOL Concentrate.

CIMCUT **Concentrates (AA, NC, SS)**—For jobs requiring oil-base cutting fluids. Added to mineral oils, they give economical mixes for higher speeds and feeds.

CIMCOOL **Tapping Compound**—Permits the use of highest tapping speeds and increases tap life amazingly.

Also, CIMCOOL Bactericide and CIMCOOL Machine Cleaner.

for 100% of all metal cutting jobs. The Answer is Pink!

Production-proved products of The Cincinnati Milling Machine Co.

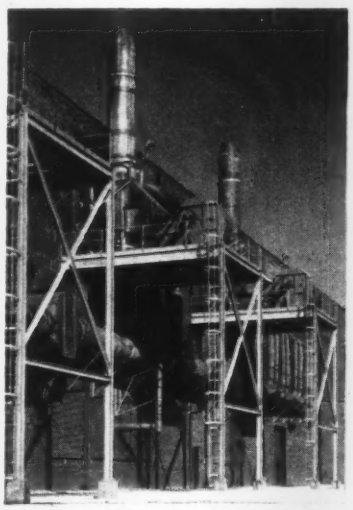
° Trade Mark Reg. U.S. Pat. Off.

FANSTEEL SOLVES SPECIAL VENTILATING PROBLEM

WITH "BUFFALO" RUBBER-LINED FANS

New Fansteel Metallurgical Corp. Tantalum Plant in Muskogee, Oklahoma

Tantalum Capacitors like this are made from Fansteel Tantalum. They are important components of electronic, aircraft and missile systems.



"Buffalo" Rubber-Lined Fans provide efficient ventilation for the critical control necessary in the Chemical Operations Building of Fansteel's new, ultra-modern tantalum plant.

Key point in Fansteel's new facilities is the Chemical Operations Building, where the valuable metals tantalum and columbium are produced. Removing impurities and extracting the metals from the ores requires a series of precisely-controlled chemical and electrochemical operations.

Where air handling is so important, it is understandable that Fansteel should turn to "Buffalo", whose 81 years of engineering experience assures satisfactory ventilation under critical conditions.

"Buffalo" Rubber-Lined Fans are noted for their ability to withstand many years of punishing service. Rubber is vulcanized to all parts of the fan exposed to the air stream. There is no possibility of separation, hardening or cracking. Savings in down-time and fan parts more than pays for the slight extra cost of the rubber.

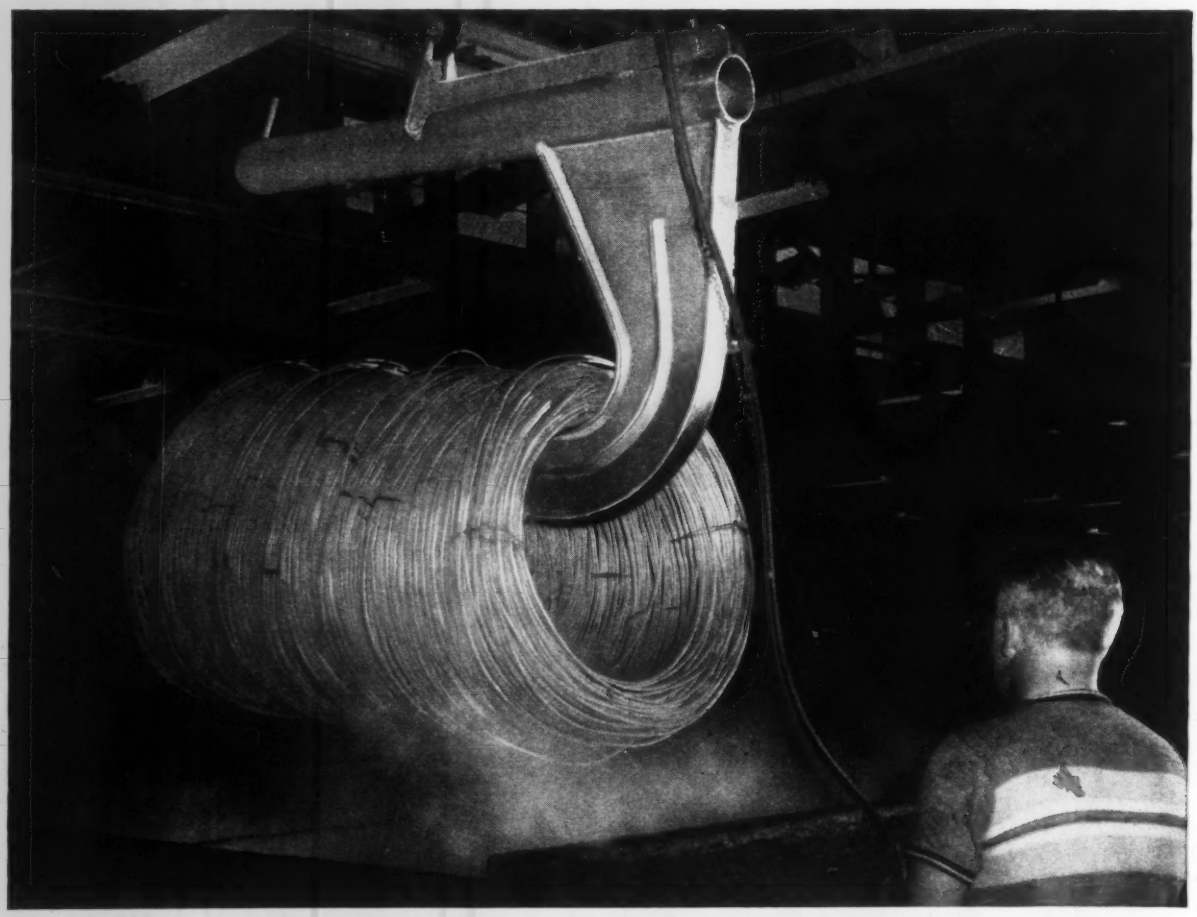
Whatever the type of severe service *your* fans may encounter, there is probably a "Buffalo" Fan to handle the job. Contact your nearby "Buffalo" engineering representative, or write direct for Bulletin 2424-F today.

BUFFALO FORGE COMPANY
BUFFALO, NEW YORK

"Buffalo"

Buffalo Pumps Division, Buffalo, N. Y.
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING • AIR CLEANING • AIR TEMPERING • INDUCED DRAFT
EXHAUSTING • FORCED DRAFT • COOLING • HEATING • PRESSURE BLOWING



Short ton or a long ton. No need to be fussy about loading pickling equipment made of Monel alloy. It stays strong. And it's easy to fabricate in heavy structures like this pickling hook. Hook was designed and built by Youngstown Welding and Engineering, Youngstown, Ohio for Triangle Conduit and Cable Company.

After 8 years on the pickling line... this Monel hook is solid all the way through

There's certainty about the strength of a Monel* nickel-copper alloy pickling hook.

Take the Monel hook above. It's just as solid as it looks... all the way through. In fact, in this plant a Monel hook has given over eight years of continuous service in 6% sulfuric acid at 140° F. Only minor repairs.

What makes Monel pickling hooks different?

Monel alloy provides a unique combination of strength and resistance to corrosive attack from sulfuric acid pickling solutions. It's the strongest non-ferrous metal you can use for pickling. And it outlasts other materials many times over.

Because Monel alloy is strong, you can have pickling hooks that are lighter, carry greater loads with less deadweight. No need to allow extra metal to offset corrosion. And here's another saving: you can easily repair Monel alloy equipment after years of service.

Monel alloy is a natural for other pickling equipment, too

Monel slings, chains and tie rods are low in deadweight, tops in corrosion resistance and strength. And in fabricated equipment like baskets, crates and racks, Monel alloy's workability and easy welding properties really pay off. You'll find details about Monel pickling equipment in a 32-page illustrated booklet "Equipping the Pickle House for Greater Production at Lower Cost." For your copy, just write Inco.

*Registered trademark

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street INCO New York 5, N. Y.

INCO NICKEL ALLOYS

Metalworking Outlook

American Motors Booms

At least one automaker, American Motors Corp., sees a glowing 1959, including relatively tranquil labor relations. It's aiming for sales of about 252,000 of its 1959 models, vs. about 170,000 for the 1958s. President George Romney says it is trying to capture about 6 per cent of the domestic market with all its cars next year, against about 4 per cent this year. AMC, now operating under a United Auto Workers contract extension, is not the target of any UAW sniping. The Big Three are drawing that union's fire.

Heil Workers Forego Raise

United Steelworkers' Local 1344 at Heil Co., Milwaukee, won't ask for a wage increase this year. Because of poor business conditions, the employees decided to forego a wage reopener in their three-year contract. The union feels the action will strengthen its hand when the contract expires next May 1.

GE Offers Savings Plan

General Electric Co. is vigorously pushing a savings plan in lieu of SUB. Some 16 unions the company deals with have accepted it, but the biggest, International Union of Electricalworkers, has rejected it. Whether IUE O.K.'s it or not, the plan will go into effect next January for GE salaried employees and those hourly workers represented by the accepting unions. About 40 U. S. companies have such programs. A typical case would see an employee earning $100 a week deducting $5 of it weekly and putting it in a fund. The company, on the average, would contribute $2.50. The money from the company and employees goes to a trustee for investment. After five years, the employee would have at least $2000 to his credit, plus any appreciation from the investments.

Labor Notes from Ohio

Supplemental Unemployment Benefit hearings in Ohio's Supreme Court may begin in October. All briefs have been filed . . . A compromise settled the Timken Roller Bearing Co. strike. The steel union didn't get vesting, but it did get a lump sum severance payment plan in place of pension accruals to be paid at 65 . . . Labor opponents of Ohio's right-to-work bill may go to court to prevent the measure being labeled on the ballot as a "right-to-work" law.

Wage Hikes Slightly Lower

A study by the AFL-CIO of wage settlements in the first six months shows: 1. Wage increases have been smaller than in previous years but not substantially so. 2. More contracts than normal call for no or small increases. 3. Many negotiations have been postponed or delayed. Of the wage boosts surveyed, more than 25 per cent were for 13 cents or more an hour, nearly

Iron & Steel Show Section—Page 147 Market Outlook—Page 227

55 per cent provide for 10 cents or more an hour, more than 75 per cent of the gains come to 7 cents or more an hour, 22 per cent call for 1 to 6 cent boosts, and about 7 per cent provide for no increase.

Small Tool Exports in Danger?

The American small tool industry may find its export market shrinking because the U. S. isn't active in the development of international standards for small tools. So believes Frank P. Brown, of the National Bureau of Standards, lone U. S. delegate at a Berlin small tool standards meeting. He thinks more active participation in international work by U. S. industry would: 1. Stimulate U. S. exports. 2. Lend weight to efforts at incorporating English measurement units in international standards. (At present, the pressure is to use only metric units.) 3. Keep U. S. industry better informed on what's going on abroad.

Natural Gas Keeps Expanding

The natural gas industry continues to expand despite the recession and the Memphis case. The American Gas Association forecasts that expansion projects in 1958 will total a record $1.9 billion, vs. the previous high of $1.8 billion in 1959. The 1959 level will dip but still reach $1.7 billion. The U. S. Supreme Court will consider the Memphis case in its regular fall session beginning next month.

Argonaut Auto Debuts Oct. 10

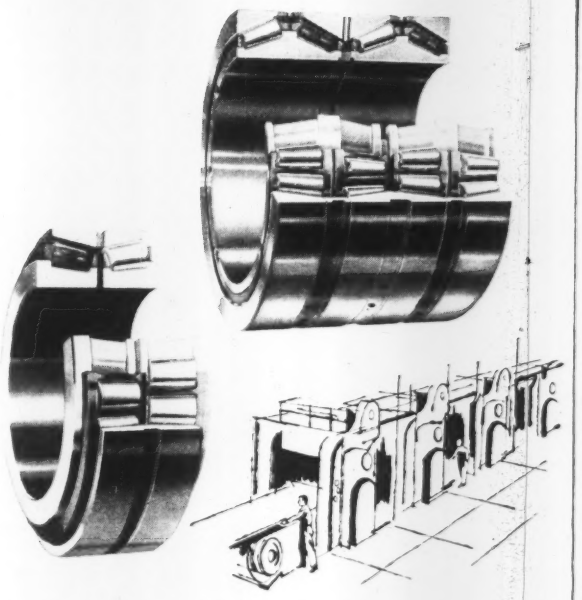
The Argonaut auto, costing $17,000 and up, will debut in Cleveland Oct. 10. Builder is Argonaut Corp., headed by Richard Luntz, chairman and president, and Robert Luntz, executive vice president. The latter is also vice president of Luntz Iron & Steel Co., a scrap firm operating in Ohio cities, Pittsburgh, and Kokomo, Ind. Seven custom aluminum body styles are available, to be built by two Italian firms. The car is designed to last 20 years or more. Stainless steel will be used for the hydraulic brake lines, exhaust and muffler system, gas tank, and nuts throughout the chassis.

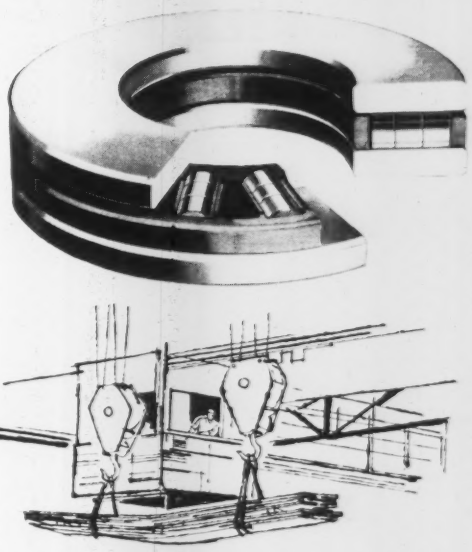
How Much Is $1 Billion?

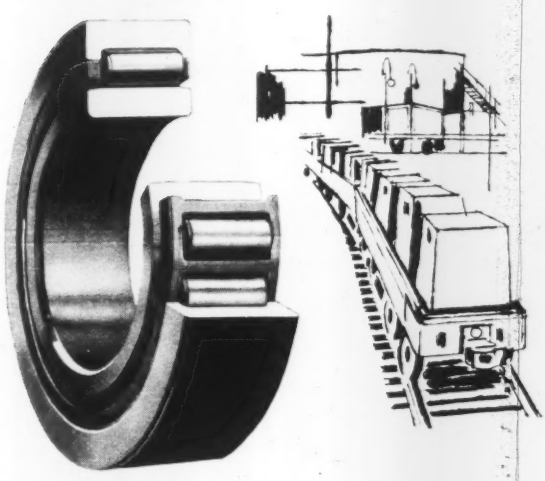
Armco Drainage & Metal Products Inc. puts it this way: If a man had started in business with $1 billion at the birth of Christ, and if he had been so unskillful that he lost $1000 a day every day since then, he would still have sufficient capital next January to buy the San Francisco-Oakland Bay Bridge, Hoover Dam, and the Empire State Building at cost price.

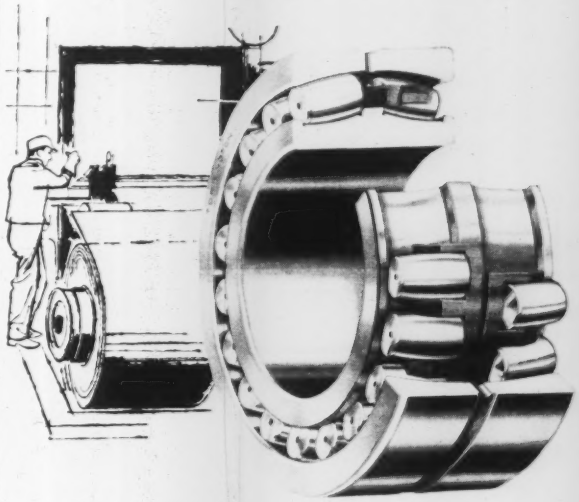
Straws in the Wind

Two-thirds of the dollar volume of shipments made by Koehring Co., Milwaukee builder of construction equipment, were products developed within the last decade . . . The Bank of Hawaii lists "extensive bauxite deposits" as one of the islands' undeveloped possibilities . . . Westinghouse International Atomic Power Co. has been established in Geneva, Switzerland, to serve the nuclear needs of Euratom and other European countries.









TORRINGTON BEARINGS FILL THE BILL ALL THROUGH THE MILL

Torrington offers every basic anti-friction bearing to meet specific requirements of steel mill applications . . .

TORRINGTON ROLL NECK BEARINGS, two-row and four-row, solid and pin-guided tapered roller, for every type of service in work roll, back-up roll and back-up thrust applications.

TORRINGTON ROLLER THRUST BEARINGS for mill screw downs and crane hook service.

TORRINGTON CYLINDRICAL ROLLER BEARINGS for ingot car service.

TORRINGTON SPHERICAL ROLLER BEARINGS for mill drives, runout tables, coilers, shears and other auxiliary equipment.

In every detail of design, construction and metallurgy, you'll find each Torrington Bearing unmatched for performance and service life. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

District Offices and Distributors in Principal Cities of United States and Canada

SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST

UNBREAKABLE MAINSPRINGS OF ARMCO 17-7 PH STAINLESS Help Make Westclox Watch Sales "Tick"

Properties of special Armco Stainless Steel add sales points, improve performance and simplify production of watches

By using Armco's high strength stainless steel instead of regular spring steel, Westclox, producers of the famous Big Ben, eliminated the possibility of rusting and subsequent breakage of mainsprings.

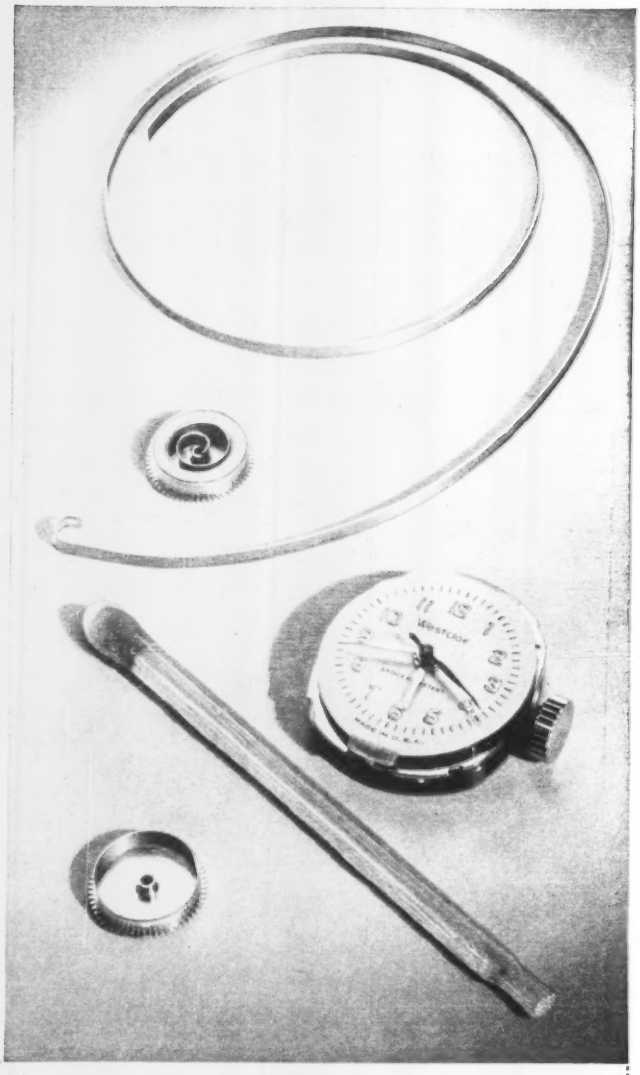
In addition to this important sales advantage, the excellent spring properties of 17-7 PH insure better time-keeping. Westclox also reports that springs are easier to fabricate. A thinner mainspring is used too, resulting in space-saving and more parts per pound.

SOLVES SPRING PROBLEMS

For springs of *any* kind, especially those exposed to corrosive conditions or elevated temperatures, Armco 17-7 PH provides unusual advantages. The mechanical properties and modulus of elasticity of hard drawn wire and extra hard temper strip are comparable to music wire and are much less affected by temperatures to 650 F than either 18-8 stainless or music wire. And with resistance to corrosion that is practically equal to Type 302 stainless, it offers a valuable combination of durability and strength.

Available in sheet, strip, plate, bar and wire, Armco 17-7 PH Stainless Steel is readily fabricated into coil, flat and power springs as well as spring washers and clips.

Consider how its unusual properties can give *your* products new design and sales advantages. For complete information, just fill out and mail the coupon.



ARMCO STEEL

Armco Division
Sheffield Division
The National Supply Company
Armco Drainage & Metal Products, Inc.
The Armco International Corporation
Union Wire Rope Corporation
Southwest Steel Products

New steels are born at Armco

ARMCO STEEL CORPORATION, 2098 Curtis Street, Middletown, Ohio

Send me information on Armco 17-7 PH Stainless Steel. We are considering it for _____

NAME _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

Steel's $64,000 Question

Between now and some time in the 1960s, the U. S. steel industry will find it necessary to work out answers to this four-part question on expansion of capacity:

1. **What kind?**

Will iron eventually be reduced directly in submerged arc electric furnaces? Or, will oxygen enrichment of the blast, the use of sinter and automatic charging keep the blast furnace in business for many more years?

Will more steel be made in oxygen converter, Kaldo, Rotor, and vacuum furnaces? Or, will bigger, longer-life electric and open hearth furnaces continue as the work horses of steelmaking?

Will steel be continuously cast in bypassing the blooming mill?

Will the future product mix require more mills for making light, flat-rolled, and specialty products rather than heavier sections?

2. **Location?**

Will future economic growth of the U. S. dictate more capacity in the industrial Midwest. Or, should plants be built locally to satisfy the growing needs of the East, Southeast, Southwest, and West?

3. **How much?**

With 40 per cent of its capacity idle in 1958, how much more does the country need?

4. **When should it be built?**

Will more capacity be needed in the 1960s? Or, will the next surge come in the 1970s?

There are no pat answers to any of these questions any more than there have been in the past. Steel expansion has been coming in rounds. Some rounds have been induced by bulging wartime demand, others by growing peacetime needs.

By 1960, the industry will be able to make over 148 million tons a year. But in answering its $64,000 question, we predict that the industry will find 148 million tons will not be enough!

Irwin H. Such
EDITOR-IN-CHIEF

WASHED WASHERS

promote Clean workmanship

Clean hands do better work, result in cleaner workmanship on the assembly line. With washed washers, workers' hands stay clean. There is no grime, grease, graphite or other foreign matter to rub off on workers hands or on the work itself. Upholstery and woodwork is not soiled, metal components, painted and plated surfaces stay clean.

The new *washer washing* process, which also includes *rust resistant* treatment, recently introduced by Wrought Washer, is used on all popular sizes of U. S. Standard and S. A. E. Washers, on Rivet Burrs and Machinery Bushings, as well as most special washers and stampings. Add this new washing process to the consistent high quality for which Wrot Washers are noted and preferred . . . and you have a positive *Plus Value* at no extra cost.

If you use washers in your products . . . Wrot Washer can meet your requirements with every type, size, material and finish . . . and with quality that matches your own high standards. Write for Catalog No. 40.

VISIBLE

packaging shows you they're *clean*

• Not only does our new special washing process dress up the washers themselves, they are now put up in attractive 1-lb. and 5-lb. packages with strong, transparent Mylar windows . . . to let you see how clean they are.

Your No. 1 Source for quality Washers

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WROUGHT WASHER MFG. CO.

THE WORLD'S LARGEST PRODUCER OF WASHERS

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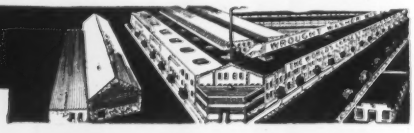


Capital Spending Rate Starts Up

(Billions of dollars)

	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
Manufacturing	13.20	11.53	11.57	11.86
Durable	6.58	5.57	5.48	5.54
Nondurable	6.62	5.96	6.09	6.32
Mining	1.00	0.92	0.91	0.96
Railroad	1.02	0.77	0.67	0.50
Other Transportation	1.69	1.40	1.37	1.55
Public Utilities	5.87	5.97	6.20	6.38
Commercial & Other	9.63	9.73	9.60	9.77
Totals	32.41	30.32	30.32	31.02

Total Spending

(Billions of dollars)

	1957	1958
Manufacturing	15.96	12.03
Durable	8.02	5.78
Nondurable	7.94	6.25
Mining	1.24	0.93
Railroad	1.40	0.75
Other Transportation	1.77	1.50
Public Utilities	6.20	6.28
Commercial & Other	10.40	9.48
Totals	36.96	30.98

Plant Investment Begins Its Upswing

THE UPTURN is real and alert metalworkers won't be caught unprepared. A survey by the Department of Commerce and the Securities & Exchange Commission reveals that plant and equipment spending has hit its low point and is turning upward faster than economists had anticipated.

Government experts, who singled out the decline in capital spending as the major cause of the recession, had predicted that no significant improvement could be expected until well into 1959. They had expected sluggish capital spending to act as a drag on the economy's embryo recovery.

But the trend seems to be moving upward. The government agencies report that industrialists plan plant and equipment expenditures in the fourth quarter at the annual rate of some $31 billion. Second quarter spending was at a rate of $30.3 billion, says the report.

Too Optimistic?—Hedging somewhat, the report cautions that data on spending expectations are subject to error and that "in recent quarters, anticipations have tended to overstate actual expenditures."

Some top government economists, however, believe the estimates may even be on the low side. They think that improvement in business conditions since the survey was taken may lead some companies to dust off delayed expansion plans or even to set new ones into motion.

Who's Expanding?—The Commerce-SEC report notes that all industries (except the railroads) indicate they will at least maintain spending in 1958's final quarter.

The bottoming out in spending by manufacturing industries brings to a stop the sharp cutbacks that began after the third quarter of last year. Expenditures dropped 30 per cent from last summer's high point to a second quarter annual rate of only $11.6 billion.

Durable goods makers were hit harder than producers of nondurable goods. Capital outlays hit a rate of about $8.2 billion in the third quarter of 1957, but fell to less than $5.6 billion in the middle of this year. The government report predicts a further slump to about a $5.5 billion rate for this quarter before the rate turns up during the final three months.

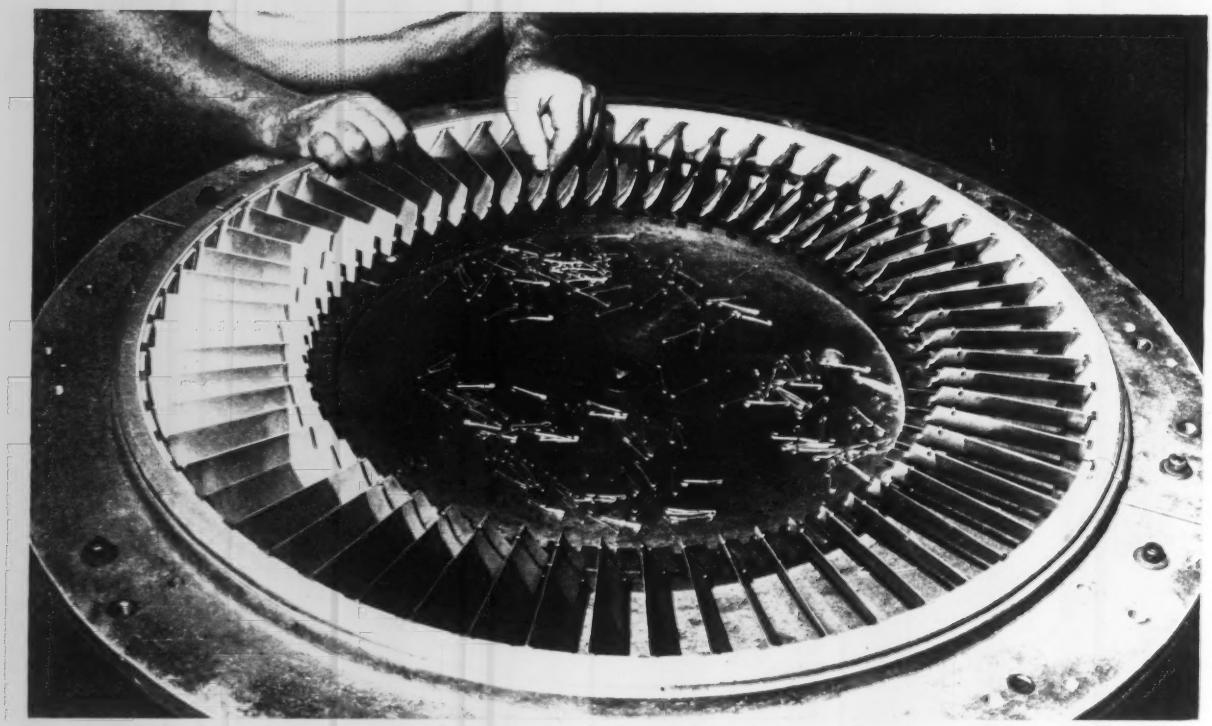
A New Problem—Government officials look for the projected expansion to cause new headaches in the form of tight money.

If the capital expenditures take a sharp upward swing early in 1959, as expected, it could lead to new competition for already scarce funds (even though spending will be at a lower level than in 1957).

Result: Firms seeking to expand will probably run into higher interest rates.

What It Means—Metalworking's markets are going to recover quicker than had been anticipated. Firms that aren't ready are going to lose sorely needed profits.

Expansion will continue. It has to (see Page 149).



Handy & Harman.

Worker preplaces clips of silver brazing alloy on the ends of turbine blades before brass shrouds are fitted in place

Industrial Uses for Silver Increase

WORLD PRODUCTION of silver this year will hit an estimated 221 million ounces compared with 222.7 million in 1957. World consumption (exclusive of coinage) will be about 205 million oz.

Since silver is essentially a by-product metal, the last year's slowdown in nonferrous mining operations has resulted in lowered output in the U. S., Canada, and Mexico. U. S. production will be about 36 million oz this year, but little or none of it will go to industry. Reason: The Treasury Purchasing Act set the price at 90.5 cents per oz, while the open market (world) price is 88.625 cents.

The result is obvious. U. S. industry will buy about 95 million oz on the world market in 1958, just under 50 per cent of the world's production.

U. S. Supply—Because of large treasury stocks and world-wide demonetized coin volume, there is no prospect of a shortage in the near future. But long term production trends in the U. S. will continue downward. Newer base metal mines are in areas where silver is relatively meager. Since World War II, only one mine of note has been developed (near Wallace, Idaho, and leased from Vulcan Silver-Lead Corp. by American Smelting & Refining Co.).

Simon D. Strauss, vice president of Asarco, points out that domestic production last year (37.5 million oz) is only 48 per cent of production 20 years ago. Conversely, he notes, consumption by the arts and industry (particularly the latter) has trebled to about 95 million oz in the same period.

Mr. Strauss says that, in the past two decades, richer deposits have been mined out and that silver values in composite ores have declined. He expects consumption to at least double in the next 20 years and he warns that ultimately demand will surpass supply.

Applications—Industrial uses account for about two-thirds of consumption. Nearly half this volume is for brazing alloys, being used in the newer industries (such as missiles, jet aircraft, and atomic and electronic applications). Because of its high conductivity, silver is increasingly used for contacts in electronic equipment (notably in computers and long distance, direct-dialing telephone installations).

Silver lithium alloys are particularly adaptable to brazing thin and honeycomb sections because the solution of the base metal by the molten filler is practically nil, says A. M. Setapen, manager of engineering, Handy & Harman, New York. "Lithobraze alloys can be used to join many of the common heat resistant alloys. Selection of the proper alloy makes it possible to combine brazing and solution heat

treating operations," he adds.

Silver additions are used in chemical processes as catalysts. Reflectivity is bolstering the metal's use for industrial and indirect lighting. Silvray Lighting Inc., Bound Brook, N. J., is using about 250,000 troy oz annually in silvered electric bulbs.

New Uses — Handy & Harman predicts that new industrial applications will be found by the scores.

Experiments in commercial jet aircraft are helping to develop silver brazing alloys for fabricating of metal skin structures. Silver and alloy brazing are also being utilized in rocket propulsion and guidance systems.

And a new submarine battery contains 28,896 lb of silver. Cost: About $2.5 million.

Civilian—Specialty Brazing Laboratory, Riverside, Conn., brazes a bus bar contact (both assembly components are copper). Alloy cost is about 4 cents per assembly.

Induction Motors Corp., Westbury, N. Y., maker of fractional motors, joins rotors with a preformed ring of brazing alloy by induction heating.

Shaw-Perkins Mfg. Co. makes radiators for liquid-cooled transformers. The radiators are made up of banks of steel tubes assembled to inlet and outlet headers. Previously welded to the headers, the tubes are fastened by rings of brazing material.

Perlman Heat Treating Corp., Westbury, N. Y., brazes aircraft fuel system parts. One part, a fuel filter screen, consists of five parts: Two stiffeners, a screen, and two end fittings—all 302 stainless. These are joined by silver brazing, using induction and hand-torch heating methods.

Helium Plant Planned

The Department of the Interior will build a helium plant in the Keyes natural gas field, Cimarron County, Okla., says Acting Secretary Hatfield Chilson.

Congress has approved $12 million in funds for the plant which will be the fifth operated by the government. Its maximum yearly output will be 200 to 290 million cu ft. Construction, says Mr. Chilson, will begin as soon as possible.

Armco Adds Sinter Plant

Plant managers expect blast furnace output to rise, costs to decline in open hearth operations. The facility will process Labrador ores and reclaim iron in flue dust

A NEW sintering plant is supplying three blast furnaces at Armco Steel Corp.'s Ashland, Ky., plant with 2400 tons of sinter per day. It's the latest step in the move by steelmakers to boost furnace production and cut use of coke.

Armco plans to reclaim the iron content (about 50 per cent) in 360,000 tons of flue dust and sludge which has accumulated in the last 16 years.

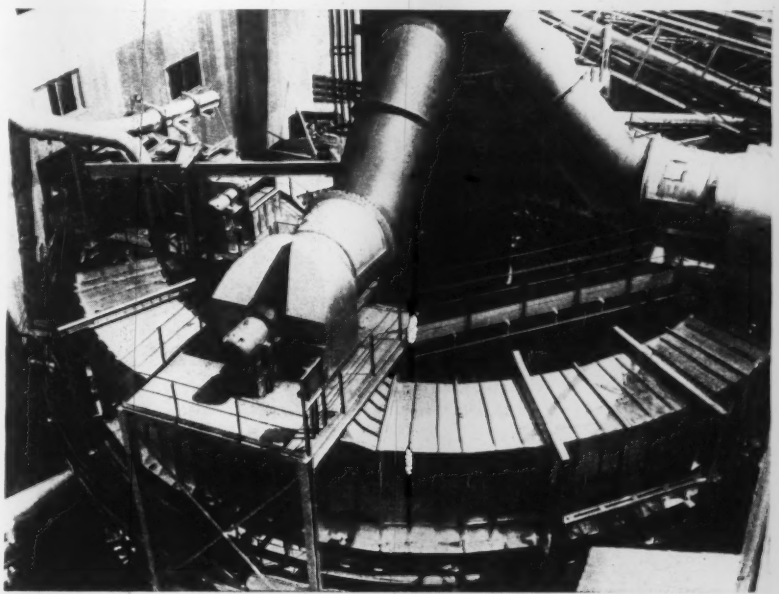
Blast Furnace Burden—Primary purpose of Armco's new facility is to agglomerate ore shipped from Labrador. It will provide the three largest blast furnaces at Ashland with an entirely beneficiated ore burden consisting of taconite pellets, oversized Labrador ore, and sintered ore, reports J. M. Lobaugh, works manager. Armco will use self-fluxing sinter.

Coke use is expected to drop while furnace output rises. Four furnaces at another plant which changed to beneficiated burden between 1952 and 1957 increased their iron production from 4500 to 5750 tons per day, in a gain equivalent to adding another furnace (see STEEL, Nov. 25, 1957, p. 71).

The plant's open hearth operations will benefit, too. With more hot metal available, operating costs are expected to decline. Open hearths will require less purchased scrap.

A "First" for Dravo—The plant was engineered and constructed by Dravo Corp., Pittsburgh. It's the first sintering plant that firm has placed in operation under a license granted by Lurgi Co. of Germany. Dravo is building three. One of 2000-ton capacity per day is undergoing shakedown operations at McLouth Steel Corp.'s Trenton, Mich., plant. Two others, with potential output of 15,000 tons per day, are being built for U. S. Steel Corp. at Saxonburg, Pa., and Gary, Ind.

In the Ashland installation, the sinter machine has maximum bed depth of 13½ in. and an active hearth area of 807 sq ft. Pallet width is 8 ft 3 in. Active length is 97 ft 6 in. with 15 windboxes.



This sinter cooler is part of a new Armco Steel Corp. plant at Ashland, Ky.

How Congress Changed the Small Business Act

1. The Small Business Administration was made a permanent government agency.

2. A firm can borrow up to $350,000, instead of $250,000.

3. The maximum interest rate on SBA loans was cut from 6 to 5½ per cent.

4. Small firms were entitled to a fair share of government surplus equipment disposals (a set-aside program will be established).

5. SBA was ordered to encourage small firms in R&D work by helping them gain government R&D contracts, by providing them with the benefits of R&D work done at government expense, and by lending to pools of small firms created especially to do R&D work.

6. Limitation of the small business definition to those firms with 500 or less employees became more flexible. It varies from industry to industry.

7. Revolving fund authority for SBA was boosted from $530 million to $650 million. The amount allowed to be outstanding for loans was raised from $305 million to $500 million.

8. SBA gained wider investigatory powers to explore all matters relating to small business.

New Funds: Big Help for Little Firms

This group is a political force not to be ignored in an election year. Congress has developed some new forms of aid. Here's a STEEL resume and outlook in this area

WANT TO START a company to invest in small businesses? Get at least nine other stockholders. Be ready to invest at least $150,000, and you are ready to begin. Here's the procedure to follow:

1. At your local Small Business Administration field office, pick up the regulations and forms to be filled out (they won't be ready until after Nov. 1). 2. Put together a tentative set of articles of incorporation. 3. Have proof of availability of your funds. 4. Show your SBA fieldman your record of ability as a financial manager and give him your plan of operations (including the area you want to cover). 5. After you have SBA's tentative approval, go after your state charter. 6. File formally for an SBA license and loan for $150,000 to match your money.

If all goes well, you'll be in business by Jan. 1, 1959.

Plenty of Competition — You won't be alone. Since passage of the Small Business Investment Act last month, SBA has received over 1200 inquiries. Most of the companies will probably be affiliates of existing financial institutions, guesses Wendell Barnes, SBA administrator, because operating costs may be excessive without the staff of an old firm behind them. Priority for licenses will go to firms not asking for any SBA money but willing to put up $300,000 themselves.

Everyone seems willing to help small business under the new act, as its sponsors, Sen. Lyndon Johnson (D., Tex.) and Rep. Wright Patman (D., Tex.), foresaw. Some inquiries are also coming from trade associations and chambers of commerce. They couldn't organize investment firms themselves, but they are urging members to get interested.

Enticement—Besides the chance to put money into growing companies, the act will be successful on the basis of its tax advantages to the investment companies and the investors (see resume of the act above). SBA will not underwrite or guarantee any loans the investment companies make, nor will it set the interest rates they charge. It will merely O.K. the original license and reserve the right to inspect a firm's operations.

Observers expect the investment firms to put their money in well-established small firms, rather than new ones. Mr. Barnes sees it as an operation carrying the small company through its initial stages of financial development until it can

Resume of the Small Business Investment Act

Administered by Small Business Administration through its Small Business Investment Division.

To license privately owned and operated small business investment companies.

To loan money to small companies or buy their debentures convertible to stock.

These firms will be chartered in their states or by the SBA when state laws prohibit them.

Each investment company will have at least $300,000 initial capital and surplus ($150,000 of which may be loaned from the SBA). SBA can loan additional money, up to 50 per cent of the company's capital and surplus (including the original $150,000 from SBA).

Loans by the investment companies to small firms may run 20 years with provision for a 10-year extension.

The investment companies will receive this special tax treatment: 1. Investors can treat losses as ordinary deductions, rather than an offset against capital gains. 2. Investment companies receive the same treatment on losses from the purchase of convertible debentures. 3. The companies also receive a 100 per cent dividends received deduction.

go into the market for its own money.

Money Is Ready—SBA has $50 million to loan to investment companies, with a $250 million revolving fund authorized by Congress. Eventually, SBA will limit the number of firms which can be started, but at this point it has no guidelines to estimate potential growth. If it paid out its $50 million in fiscal 1959, it could help over 300 companies get started if each took the $150,000 initial money.

No exclusive territorial rights will be granted to these firms for making their loans, but Mr. Barnes expects several firms to be chartered in each state. Their loans may be made nationwide.

Regulations Aren't Ready—The holdup until Nov. 1 on the program is to allow SBA time to draft regulations covering the companies. Several types of licenses will be issued which will determine the extent of SBA's supervision. SBA will probably charge investment firms 5 per cent for the money they borrow. Another angle to be worked out is the degree of supervision which the Securities & Exchange Commission will have over the investment firms.

Firms eligible for loans from the investment companies will probably have to meet the same standards required for a regular SBA loan, maybe even tougher standards, because Mr. Barnes will grant the investment firms the right to use their own judgment "as to where the opportunities are."

How Much Help?—While SBA expresses enthusiasm about the law, others have their doubts. Says a spokesman for the U. S. Chamber of Commerce: "We are lukewarm toward the act. One feature which allows SBA to loan directly to state development companies (who, in turn, would loan to small businesses) may mean more federal control of state groups."

You cannot answer the question, "How much help will the act be for small firms?" until you decide whether a gap exists in the normal financing means. The Federal Reserve Board tipped the balance in favor of this act by telling Congress its studies of small business problems has revealed a gap. Money is available for short term loans, but not long term small loans. Some private economists violently disagree with the Fed's interpretations.

To Replace the SBA?—Some optimists think the act might work to the point where the SBA could be dropped from the federal rolls, if enough bankers get behind it with enthusiasm. On the other hand, it is possible the next Congress could reinterpret the act to give priority loans to depressed areas.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

Acme Drops Salary Cut

Acme Steel Co., Chicago, has canceled a 10 per cent salary cut which was imposed on employees down to the foreman level, says Frederick M. Gillies, chairman. Salaries were trimmed to help earnings during the period of low steel demand.

The cancellation, he says, is a result of improved conditions. Third quarter profits are expected to be the highest this year, though lower than the corresponding period of 1957.

Distributors Battle the Recession . . .

1. By dropping low margin, low volume lines.
2. By automating office and warehouse procedures.
3. By better selection and training of salesmen.
4. By employing more engineering specialists.
5. By shunning manufacturers who overload territories with too many distributors.

Manufacturers Support the Attack . . .

1. By weeding out the weak and inefficient distributors.
2. By providing better territory protection.
3. By developing training programs for distributor salesmen.
4. By stepping up advertising, providing more mailing pieces and sales aids for the distributor.
5. By adopting and sticking to fair, stable price policies.

Distributors Being Squeezed

They're finding that the only way to beat price cutting is "to increase efficiency at every level." Some 1800 U. S. distributors report physical volume off 20 per cent

INDUSTRIAL distributors have never had it so rough, but they're striking back. Alert metalworkers are joining the battle.

Physical volume of the nation's approximately 1800 distributors is off more than 20 per cent, and dollar volume is off still more. The profit picture is obvious.

Trouble Source — "Price cutting has been the biggest culprit in the last year," relates Robert Sernley, executive secretary, National and Southern Industrial Distributors Associations. Distributors themselves echo the charge and cite these reasons:

1. Manufacturers' agents and office - without - warehouse operators (who can operate on lower margins) have been grabbing the best customers by offering lower prices. These customers generally buy large quantities and receive shipments directly from the manufacturer.

2. Manufacturers (in an attempt at greater coverage) have overloaded territories with distributors. This has encouraged price cutting.

3. Some manufacturers have poor pricing policies. This is an exception, but distributors are spotting and shunning firms whose pricing is poor. These firms appear to set prices to meet specific situations—one distributor pays one price, another a different one. "These are the same operators who whipsaw one against another in the purchase of supplies," comments a midwest distributor.

4. Some inefficient distributors don't know costs.

Facts of Life—Most distributors accept price cutting as a simple competitive reality during poor business cycles. "The only way to fight it," says Gordon Vaughn, vice president, W. M. Pattison Supply Co., Cleveland, "is to improve efficiency at all levels."

His firm stocks about 60,000 items from some 2500 companies. Like most distributors, 80 per cent of its volume comes from the products of fewer than 10 per cent of the represented companies.

Pattison is pruning the low profit, low volume items from its lines. It's automating office equipment to cut costs and improve efficiency. Another measure is an attempt to improve its sales force.

"We hire all salesmen through

an agency," explains Mr. Vaughn. "We test them thoroughly at Fenn College and put them into a training program. In five years, these men become good salesmen and know our company and its products inside and out."

Another Way—Samuel Harris & Co., Chicago, is bucking manufacturers' agents and specialists by hiring its own engineering experts. In addition to 15 salesmen who handle Harris' full line, nine specialists are employed for such items as threaded fasteners, power transmissions, abrasives, air safety equipment, and honing machines.

"We feel this is a trend toward giving the customer better engineering assistance," says Wendell Clark, vice president. "It has another advantage, too, in that these specialists getting into plants can often provide sales leads for our general salesmen."

Giving impetus to this are manufacturers who woo distributors by providing sales training. If we provide more specialists in our sales forces, keeping them up to date on equipment and technical practices becomes a major problem. The manufacturers are helping in this respect," says Mr. Clark.

Schooling Distributors — One company providing such a program is Scully-Jones & Co., Chicago. About six years ago, it shifted from manufacturers' agents to industrial distributors. "We have about 80 distributors. Our initial job was to acquaint them with our products and company," J. Dudley Lockrem, vice president and director of marketing, points out. "We set up a three-day program. In the first year, we conducted one a month except during the summer."

The Scully-Jones "school" can handle 18 men at a time. S-J provides the distributor $12 a day expenses per man, plus half of his rail fare if the salesman travels more than 500 miles to the school.

Classes run from 9 a.m. to 5 p.m. with breaks for coffee and lunch. "It's all work," emphasizes Mr. Lockrem, "and the men feel that their time is well spent." Included: Lectures on engineering and design behind each tool plus working demonstrations, and a review of pricing and marketing programs.

"We've learned from experience that one of the most important segments of the program is a discussion of competitors' products. Knowing their features, applications and prices is a valuable sales tool," Mr. Lockrem asserts.

Guarded Areas — Scully-Jones, along with many other manufacturers, is helping distributors in the battle for territory protection. The firm gives each distributor a specific territory, generally paralleling its normal area of operations. Exceptions are in concentrated areas where the potential is adequate for two or more—Chicago and Los Angeles are examples.

Territory exclusiveness is a sensitive issue. One disgruntled electrical supply distributor in Chicago tells this story:

"We took on a firm's products on an exclusive basis and over a nine-year period built it up to a better than $500,000 account. Then came the recession. The manufacturer, in an effort to get 'better market penetration,' gave the product to half a dozen others. That brought price cutting until it's no longer worth pushing. We'll be lucky to handle $50,000 in orders for the product this year. We've regained about $150,000 of the lost volume with a competing product, but everybody lost in the deal—the manufacturer, us, and the other distributors."

Outlook — Most distributors feel that the shakeout in prices by both distributors and manufacturers has expended itself. Distributors also report that an increasing number of manufacturers are adopting a policy of crediting distributors for orders going direct from customer to factory. Factories quote distributor prices and pay the distributor his customary percentage.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

How One of Them Beats Slump

BUSINESS difficult? Creditors on your heels?

Consider the case of a Chicago distributor of machinery, tools, and dies used in the sheet metal fabricating industry.

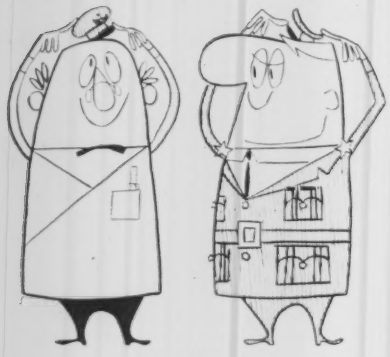
The owner was equipped with only a technical education, a few hundred dollars, and considerable experience with other firms when he established his own business. But only four months after he opened his doors, the depths of the slump came. He owed money; he was not well known. What to do?

Product Promotion—He reports: "I made an honest effort to pay my bills, then went to creditors and told my story." He also started to promote his products—via business magazine and direct mail advertising and trade shows. A comprehensive catalog was added. He made and lived up to a policy of shipping on the day the order was received. Inventories were somehow kept up because "you can't do business with an empty cart."

Results: The company is flourishing today, doing business in 48 states and several foreign countries. Its first crisis came 26 years ago. But what worked in that severe slump still will work in the milder decline today, believes William M. Ward, owner of Ward Machinery Co.

How To Hang On—Although the company was founded only four months before the bank holiday of March, 1933, it hung on, and its sound approach eventually paid off: Harold Flagler, inventor of the Pittsburgh lock-forming machine, appointed Ward exclusive distributor for the U. S.

Arthur P. Schneider, manager, points out that in this slump Ward has not reduced sales activities, has not cut inventories, and will continue to pour nearly half of all profits into advertising.



Scientists Invade Military Management

A NEW company, Mitre Corp., will soon take over the U. S. air defense system. This is another example of private industry stepping into a management role for the armed forces. Originally developed by the Air Force, and most publicized in the case of Ramo-Wooldridge Corp., (AF ballistic missile manager) this concept is rapidly being accepted by all elements of the Pentagon, plus most congressmen.

Mitre Corp., formed by the Massachusetts Institute of Technology, will replace the AF's Air Defense Systems Integration Division, which includes personnel and facilities of the Air Materiel Command, Air Research & Development Command, and Air Defense Command. A nonprofit group, the new company will (in official language) "take over the co-ordinated air defense activities from initial research to the end product." If, as some Pentagon sources guess, air defense will soon be costing us $5 billion a year, then Mitre Corp. will be no midget in corporate field. Although its operations have yet to be spelled out, a tremendous amount of military procurement will come through it to metalworking, and to electronic firms in particular.

The next step in industry's military management role will probably be within the Navy: Look for the Polaris program to be budgeted separately from other Navy missile and shipbuilding projects, with a private firm eventually assuming a role similar to Ramo-Wooldridge's in the AF. If the trend bears fruit, the Navy's next missile generation will probably be born completely outside the Navy's bureau system.

Besides the "better management" argument in favor of private industry's military jobs, such companies are not restricted to civil service salaries. Institute of Development Analysis (a branch of MIT) works closely with the Advanced Research Projects Agency, but, unlike ARPA, can pay enough to get top scientists.

There is some talk in Washington that our new space agency, National Aeronautics & Space Administration, will form a tie with an industry group for the same reason. The appointment of Case Institute of Technology's Dr. T. Keith Glennan, is regarded by some as indicative of this approach to space management problems. Dr. Hugh Dryden, head of the National Advisory Committee for Aeronautics (which will form the nucleus of NASA), will be Dr. Glennan's deputy.

One of the most forceful arguments put forward in favor of industry military management: We do contain good management within the armed forces, but the most progress is made under a system most like private industry's. Example: The way Rear Adm. H. G. Rickover has run the Navy's atomic sub program.

Stockpiling Restricted for Fiscal 1959

The Office of Civil & Defense Mobilization says the following will be stockpiled by the General Services Administration in fiscal 1959: Amosite asbestos, small diamond dies, muscovite block, and film mica. OCDM also ordered some materials to be upgraded by the GSA: Oxygen-free copper, ferromolybdenum, ferrovanadium, molybdic oxide, and tungsten carbide powder. Some $3 million will be spent on the upgraded materials.

There is still talk on Capitol Hill for an expanded stockpile to aid the lead, zinc, and copper industries, but OCDM is reported to be holding firmly to its three-year stockpile objectives. We probably have more than a three-year stockpile of those metals.

A Balanced Budget for Fiscal 1961?

Budget Director Maurice Stans says that we can expect $80 billion in tax receipts (under present laws) by fiscal 1961, if the economy regains its normal growth trend. Spending in fiscal 1959 will run close to $80 billion, but the Eisenhower administration is reported ready to fight to hold down spending in fiscal 1960 and 1961. Receipts in fiscal 1959 will probably amount to only $67 billion. The recession, says Mr. Stans, cost us $2.5 billion in individual tax receipts, $3.7 billion in corporate tax receipts, and $1.2 billion in excise tax receipts (counting the cut Congress made in excise taxes). Meanwhile, Vice President Nixon unofficially opened his Presidential campaign by telling a Harvard University audience that lower corporate and high-income-bracket taxes are needed to allow the economy to grow normally.

Missile and Space Notes

Quote of the week—"We had enough money to get nine satellites to the launching pad, but only enough technology to get three into orbit," says William McDonnell, president, U. S. Chamber of Commerce . . . The first Thor IRBM shipped to Great Britain has arrived . . . The Navy will build a $10 million Polaris assembly plant at its ammunition depot in Charleston, S. C. . . . British troops are being trained to fire the Thor, but not the Jupiter.

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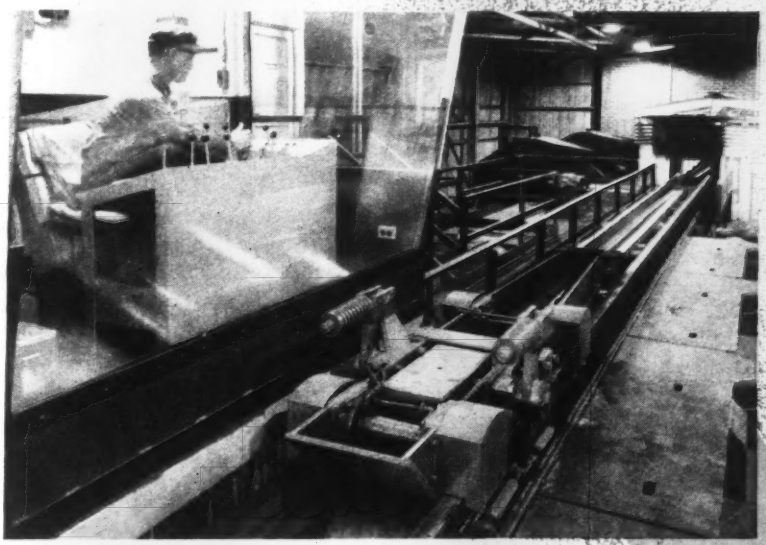

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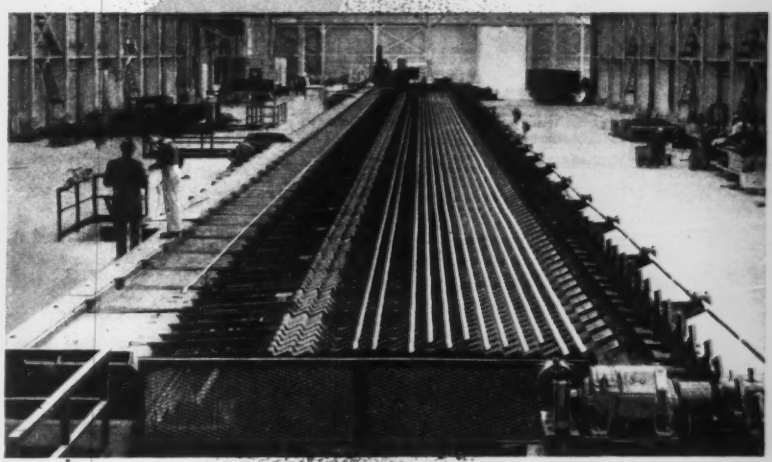

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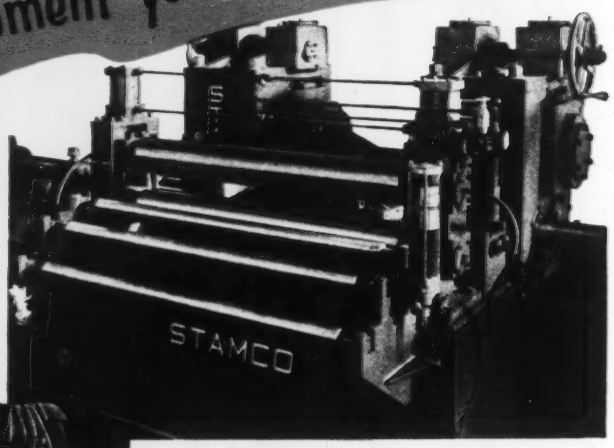

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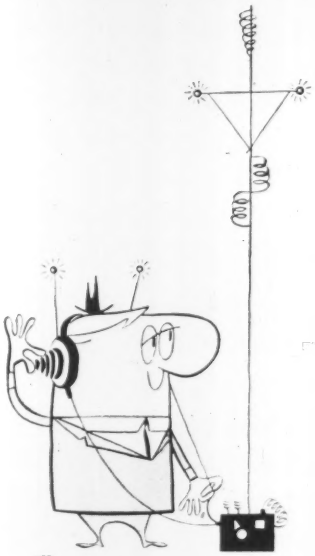


Listen to October

with Sonic Futurama

EDITOR'S NOTE— *The editors have received a small black device via Railway Express. The manufacturer calls it the Sonic Futurama, a device which, allegedly, picks up sounds that will be made as far as 90 days in the future. Although it has flaws (static is severe), we would like to show you what the Sonic Futurama can do. One of the loudest sounds we are receiving is a speech by a high official of the United Auto Workers. It'll be made sometime in October. Here it is:*

"I want to think out loud about some problems facing our union. There are new dimensions in which we will be required to carry out our responsibilities, and it would be tragic and dangerously unrealistic for us to think about the problems and the promise of tomorrow in terms of yesterday's standards.

"I refer to complaints I have heard—regrettably emanating from a few of our own brothers—about our contract settlement with the Big Three auto giants. I do not blame these few people. Seeds of their thinking have been planted by vicious, selfish, reactionary forces in America.

"That un-American, lop-sided thinking goes like this: After months of turmoil, strikes, and heavy losses of wages, the UAW finally signed—on terms offered by the companies last June!

"That argument, I say to you, is a vicious distortion of the truth—on two counts.

"First, the settlement is not what the companies offered last June. Only a careless reading of the contract would make anyone believe that. We won what the companies were forced to offer last June, plus three others . . . . (static interference)

"Second, this fight you people have fought and won has been a good, a worthwhile battle. Why? Because we have proved the statesmanship of organized labor. I congratulate you on your victory!

"I said last January, and I quote: 'What we do at the bargaining table in 1958 will be an important factor in re-establishing the dynamic, expanding balance between greater productive power and greater purchasing power.'

"We have been moderate in our settlement, yes. But we will add to the purchasing power of American workers at least 16 cents more by June 1, 1960. Your average rate will hit $2.67 an hour by then. That will enable us to buy more and to get this economy on the right road once again.

"We have been moderate because we do not want even the faintest whisper of a charge hurled at us that we are weakening our country in the titanic struggle with Russia. Americans know how we have acted to rid ourselves of the Reds, while so many others have merely talked.

"And there's another kind of reasoning that I want to demolish right here and now. You cannot pick up daily papers, or tune in on radio or television, or read a speech made by the head of some industry group without learning that we are supposed to be responsible for inflation and that higher wages have triggered the inflationary spiral.

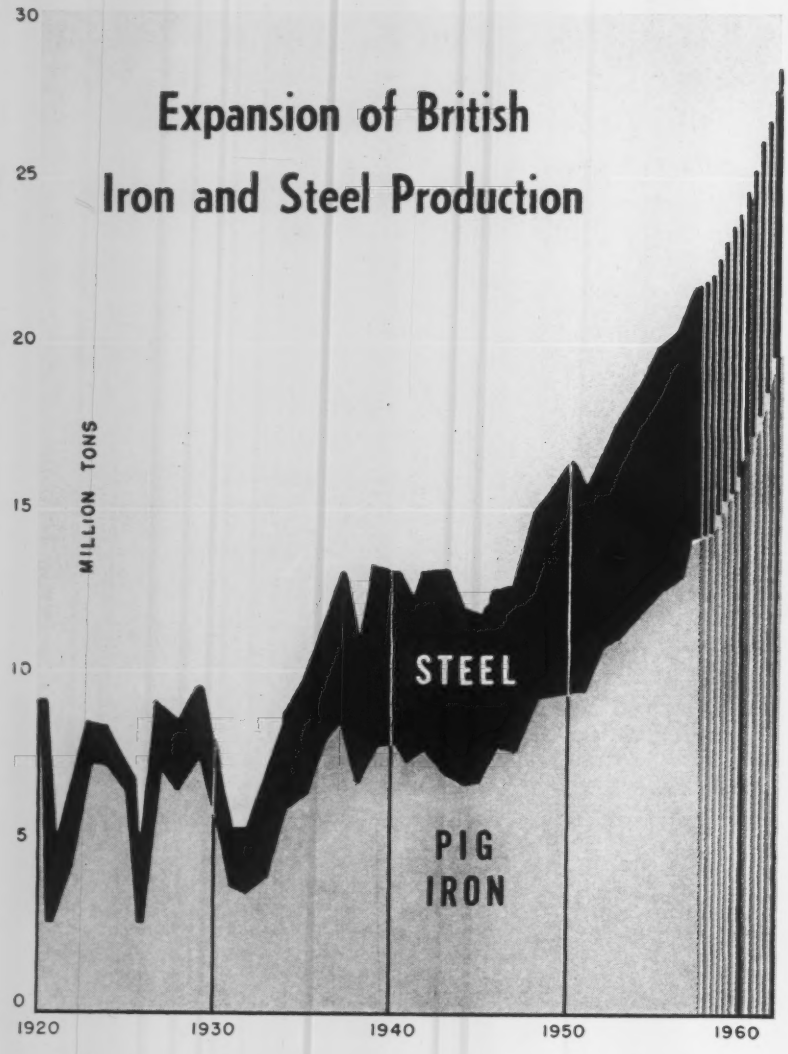
"What are the facts?

"Let's take General Motors. General Motors is much like the goose that laid the golden egg; no matter how much you slice off the economic fat, when you get through, the goose is fatter than ever . . . . (static interference)

"So much for the myths about what causes inflation. What will cure inflation is the statesmanship—with progress—shown by your union in the settlement recently signed.

"Statesmanship—with progress—is the new dimension I referred to earlier. If we can get management to show that same kind of statesmanship, then we can go forward together.

"As I said at the start, I have just been thinking out loud, talking from my heart. This is no formal speech. But if I had prepared this talk and if I had to give it a title, it would be: 'Collective Bargaining in the Framework of the New Dimensions of Economic Abundance in the Age of Automation and the Atom' . . . ." (static interference, or applause).



British Steel Slowing Down

Domestic deliveries drop 5 per cent, exports fall 24.4 per cent. Total drop: 8.2 per cent. Consumption falls and steel users dip into inventories. Exports are down

BRITISH steel production hit a weekly average of 315,900 tons in July, compared with an average weekly rate of 362,000 tons during the same month last year.

July pig iron production was at the rate of 227,000 tons weekly, vs. 263,400 tons a week in July, 1957.

Steel consumption by British manufacturers has dropped from the levels reached last fall. Reasons: Both users and producers of steel have been dipping into inventories in fear of a deepening recession, and exports have been declining as a result of the U. S. business slump.

Second Quarter Figures—Deliveries of finished steel in the second quarter were 8.2 per cent below those in the same period of 1957. (Comparison: 3,802,700 tons, vs. 4,140,300 tons.)

Domestic deliveries during the second period hit 3,293,700 tons, 5 per cent under the 3,467,400 tons shipped during the same quarter in 1957.

Exports took a much sharper dip: 509,000 tons, vs. 672,900 tons in last year's second quarter, a 24.4 per cent drop.

But imports climbed (91,500 tons, compared with 86,300 tons during the second quarter last year).

Total shipments to British users of steel hit 3,385,200 tons in the second quarter, raising the total for the period to 7,090,200 tons (first six months total in 1957: 7,217,100 tons).

Consumption increased during last year's second half (largely because of a revival of the auto industry) but has tended to decelerate since then. Use of steel during 1958's second period was at just about the same level as it was a year ago.

Where They Stand—Deliveries of steel to the mining industry were 9.7 per cent lower than they were during last year's second quarter. Shipbuilding took 3.6 per cent less, railways 19 per cent less, and makers of bolts, nuts, rivets 23 per cent less.

Only three industry groups took more steel during the second quarter than they did a year ago: Electrical engineering, 13 per cent; motors and aircraft, 8 per cent; and general engineering, 1 per cent.

Investment Rules Eased

In keeping with her position as a creditor nation, West Germany has lifted most restrictions on foreign investment.

Liberalized capital marks (libkamark) has been eliminated. Effect: Direct foreign exchange investments in Germany are now permitted. Previously, investments were restricted to liberalized marks. For acquisition of or participation in German enterprises, investors may pay in any freely convertible currency.

In another move to loosen restrictions, West Germany will permit the sale of foreign-owned businesses under a general license (rath-

er than an individual license as before).

The import and export of German securities no longer must be made through the mails. Foreigners are no longer required to conduct transactions in securities through a German commercial bank.

Franco-German July Output

July production of unfinished steel in France dropped to 1,467,000 tons, compared with 1,509,000 tons in June. Average monthly production in 1957: 1,462,000 tons.

West Germany's steel production in July showed an increase over the previous month. July's output climbed to 1,922,000 tons, vs. 1,859,000 in June. Both figures are below 1957's monthly average output of 2,042,000 tons.

Used Machine Sales Rise

Used machine tool sales in July were 2.8 per cent above June's, says the Machinery Dealers National Association, Washington, D. C.

"Sales in June were 12.4 per cent over those in May," said R. K. Vinson, MDNA's executive director. "July's figures show our healthy recovery trend is continuing."

The number of machine tools selling at $200 or more rose 1.2 per cent over the June level. June's total was 5.2 per cent above May's.

July Strike Total Low

Total strike idleness in July was the lowest of any July since 1944, estimates the Bureau of Labor Statistics, Department of Labor.

About 160,000 workers were involved in strikes starting in July, and an additional 80,000 were in strikes continued from June. The 350 work stoppages begun during July, and the number of workers involved showed no change over May and June.

Only one strike of more than 10,000 workers was in effect during July. It involved about 25,000 Oregon and southeastern Washington construction workers.

Total mandays lost in July is estimated at 1,700,000.

GAMA Sees Sales Gains

Demand for equipment in home construction remains firm. Consumers loosen hold on purse strings as confidence returns. Gas appliance prospects grow brighter

"NEXT YEAR" begins now for the gas appliance industry. Manufacturers, who complained in the spring that many potential customers were deferring purchases until 1959, now say people are starting to buy. Sales are expected to increase gradually in the last half of 1958 and throughout 1959.

Edward R. Martin, director of marketing and research, Gas Appliance Manufacturers Association, New York, predicts that sales in most appliance and equipment categories in the second half of this year will top the corresponding 1957 period. GAMA thinks 1959 will be even better.

Sales Stimulus—A GAMA survey cites three reasons for improvement: 1. Consumers are more confident as the economic picture brightens. 2. Housing construction continues at a high level. 3. Gas utilities are expanding.

Consumer psychology played a leading role in curtailing appliance sales in the first half of 1958, GAMA opines. Demand for space heating and water heating equipment in new construction or for non-deferrable replacements held firm. Many potential buyers of ranges, refrigerators, and dryers delayed their purchases. As a result, water heater sales rose 0.2 per cent between the first half of 1957 and the same period of 1958, while shipments of domestic ranges slipped 11 per cent.

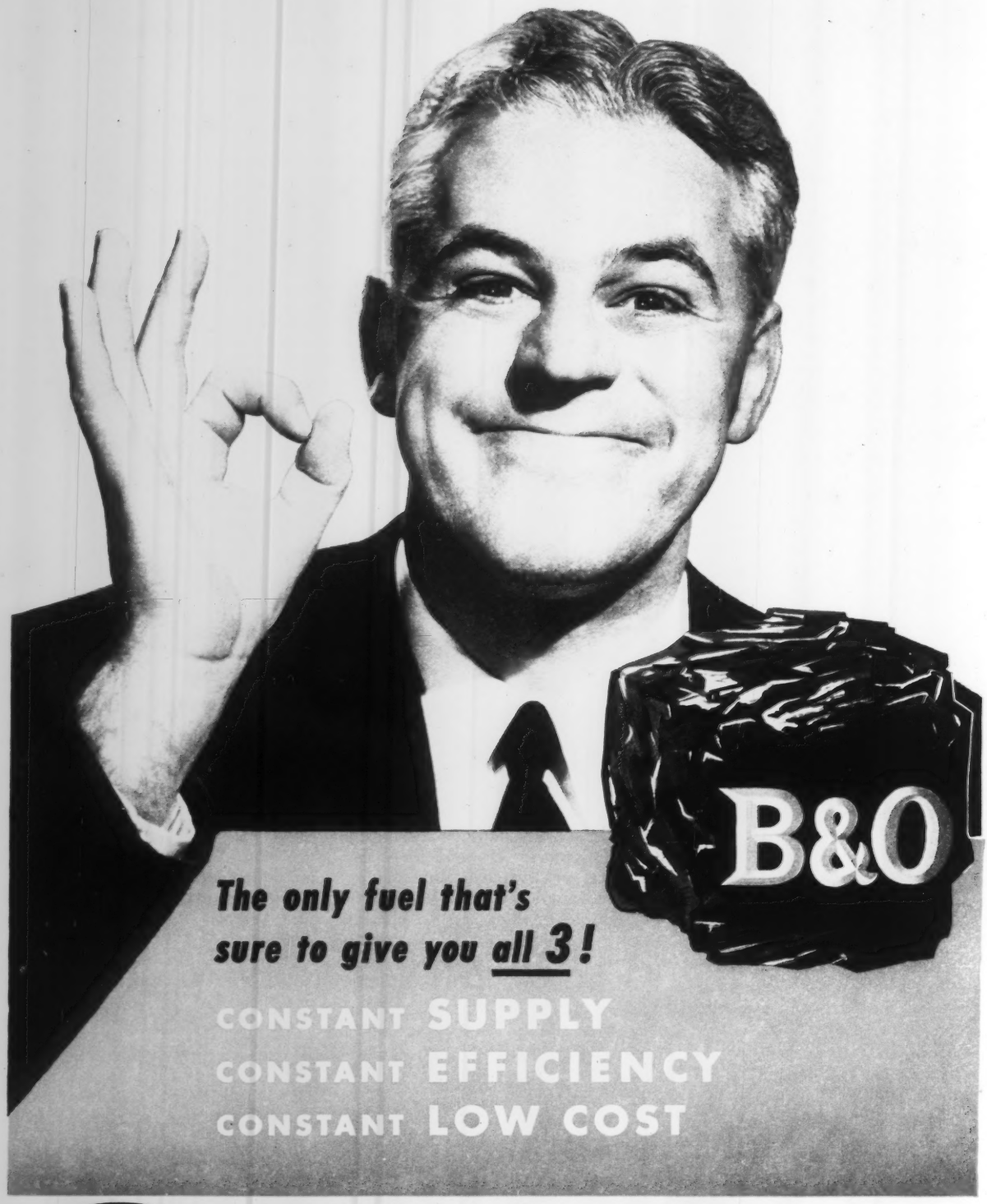
Outlook for 1959—Producers predict that sales of heating equipment will continue to rise in the last half of this year and in 1959. They believe that sales of automatic water heaters in the second half of this year will be 12.1 per cent above the last six months of 1957, and purchases next year will be 2 per cent above 1958 levels. Producers of central heating equipment look for a 2.8 per cent gain in the last half of this year and a 7.6 per cent rise in 1959.

Appliance manufacturers think the average buyer's growing optimism will pay off in improving sales for them next year. After an expected 9.3 per cent dip this year, domestic range producers think sales will climb 1.9 per cent in 1959. There'll be a turnabout in clothes dryer sales, too. Suppliers predict a gain of 12 per cent next year.

UNIT SALES—Gas Equipment and Appliances

	1957	1958*	1959*
Domestic ranges	1,968,600	1,785,400	1,820,100
Automatic water heaters	2,532,000	2,679,700	2,732,300
Central heating equipment	971,500	1,012,500	1,089,300
Vented recessed wall heaters	320,900	346,100	357,600
Floor furnaces	90,200	73,400	71,600

Source: Gas Appliance Manufacturers Association Inc.
*Estimated.



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Production through August

	1958	1957
Plymouth . .	256,004	505,022
Dodge . . .	68,293	219,202
De Soto . . .	23,051	88,862
Chrysler . . .	35,590	91,189
Imperial . .	8,447	30,172
Totals . .	391,385	934,447

President L. L. Colbert is highly optimistic as . . .

Chrysler Swivels into 1959

HOW WILL reorganization help Chrysler next year? This is one question newsmen were asking at the firm's 1959 model preview in Miami, Fla. The answer seems to be that revamping of Chrysler's staff and facilities has put it in good enough shape so that penetration of the 1959 market will be at least as good as this year's.

Company executives can't comment officially, but several have privately indicated this will keep the company on a firm financial basis and enable it to move into the 1960 market with a completely redesigned car that the company hopes will again capture 20 per cent of the market.

Background—A look at Chrysler's accomplishments this year reveals what the company has done to build a corporate structure that will give it the best possible return on its production and marketing investments.

Chrysler entered the year after a banner 1957 when the Forward Look set an industry trend and captured almost 20 per cent of that year's sales. But relatively unchanged styling plus the recession have caused this year's registrations to slip drastically. At the end of six months, Chrysler reported a $25 million net loss and its net earnings per share are likely to drop to the low levels of 1954 ($2.13) and 1956 ($2.29). Per share net earnings in 1957 were $13.75.

Production figures (above) are an indication of what's happened to Chrysler this year. Best industry guesses place the company's 1958 sales at 12 to 14 per cent of the total domestic market (expected to hit about 4.3 million cars). As L. L. Colbert, Chrysler's president, puts it: "We don't want to see any more years like this one!"

The Buildup—To avoid further catastrophe (and because financiers demanded it), the company rebuilt its corporate structure. First moves were announced this spring when top management divested car divisions of staff responsibilities. Manufacturing, product planning, and marketing functions are now under the direct control of three central staff groups.

Production facilities have been consolidated. Chrysler cars and De Soto's top two lines will be built in one plant. Imperial has its own body and assembly plant, and Plymouth assembly facilities have been revamped. De Soto Firesweep and Dodge will be built in the same plant. Mr. Colbert says Plymouth's St. Louis assembly plant will be ready for 1960. It will turn out 960 cars daily on a two-shift basis.

All engine output has been combined in Chrysler's Mound Road (Detroit) and Trenton, Mich., plants. The car divisions will make

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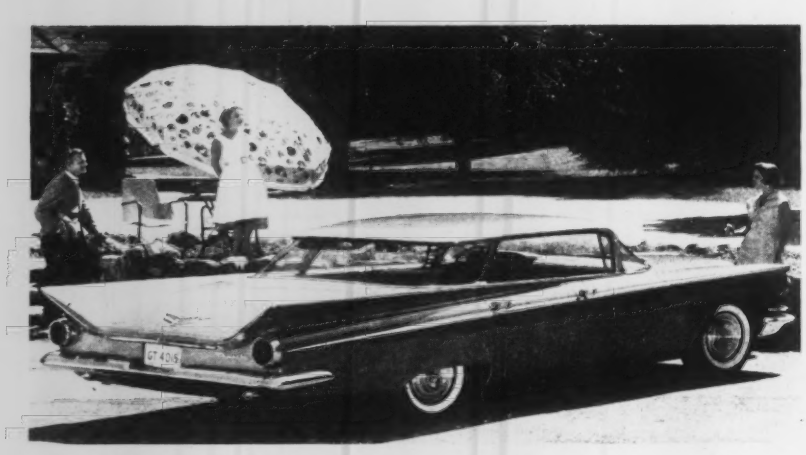


The 1959 Buick LeSabre has a 123-in. wheel base and features the flat roof line

most of their own stamped parts in respective manufacturing and assembly facilities. The rest are being produced in Chrysler's Twinsburg, Ohio, stamping plant.

Recent Improvements—The company strengthened quality control last month by establishing separate offices for that function for the manufacturing staff and the automotive manufacturing group. In addition, divisional purchasing responsibilities have been centered within the corporate purchasing department.

Suppliers will want to know that S. M. Baltzly is director of supplier relations. W. G. Embury buys nonproduction materials and F. O. Dutton body parts. J. C. Poyner is raw materials purchasing agent. D. L. Shakotko buys paint and trim and J. W. Snyder is in charge of chassis parts procurement.

A few weeks ago, the company announced the formation of an Electrical Equipment Div., Indianapolis, which will make distributors, starter motors, generators, and voltage regulators after Jan. 1. Electric Auto-Lite Co., Toledo, Ohio, will continue to supply at least half of Chrysler's electrical parts.

Savings — Mr. Colbert reports Chrysler has spent $85 million on plant and equipment changes this year. Last year, it spent $96 million. In 1956, these expenditures totaled $125 million.

As a result of this rejuvenation, Chrysler has been able to reduce its salaried personnel by about 25 per cent and company officials indicate that the firm should be able to substantially cut administrative, engineering, selling, and general expense costs which totaled $276 million last year. Mr. Colbert foresees the 1959 market at 5.5 million to 6 million sales, including 400,000 imports. He doesn't say what share his company is after, but autodom seems to be of the opinion that 12 to 14 per cent is a realistic goal.

Outlook—Success next year will depend on how the public, just starting to regain confidence, receives the cars. Full details of the 1959 line have been shrouded until the cars are publicly introduced. De Soto debuts Sept. 23 and the other lines will appear between Oct. 1 and 10. Prices will be announced then.

The company reports that over half of the parts used in the lines have been changed, although the cars appear relatively unchanged in silhouette. Among the new features will be swivel seats, pushbutton heaters and air conditioning, an air leveling system for the rear wheels, and an electronically operated rear view mirror that automatically moves to deflect headlight beams coming from behind.

To Be Competitive—Chrysler will introduce a metallic enamel with an epoxy instead of an alkyd resin primer to promote longer paint life. Ford will offer a similar paint and General Motors lines will have an acrylic lacquer.

On All Fronts — Referring to smaller cars, Mr. Colbert points out that Chrysler's acquisition of 15.2 per cent of Simca stock will give the company a strong introduction into the world market which he believes will reach 6 million to 7 million cars annually by 1965. For domestic consumption, Chrysler has developed a separate sales and service organization for Simca and will increase its dealers from 600 to about 1000. Byron J. Nichols, Chrysler's group vice president-automotive sales, says the company is looking for 15 per cent of the 400,000-unit import market next year.

Mr. Colbert confirms the company is working on its own small car, but says it won't go into production until Chrysler is sure the domestic market will support several small car manufacturers.

Nance Leaves Ford

James J. Nance, 57, has resigned as vice president and general manager of the M-E-L Div., Ford Motor Co., Dearborn, Mich. His place has been taken by Ben D. Mills, former head of the Lincoln Div. and most recently assistant general manager of M-E-L. Walker A. Williams, former vice president of sales and advertising, has been given Mr. Mills' old job.

The move is no surprise to autodom which has viewed Mr. Nance's broken-field running through the industry with interest (see STEEL, Mar. 17, p. 57).

U. S. Auto Output

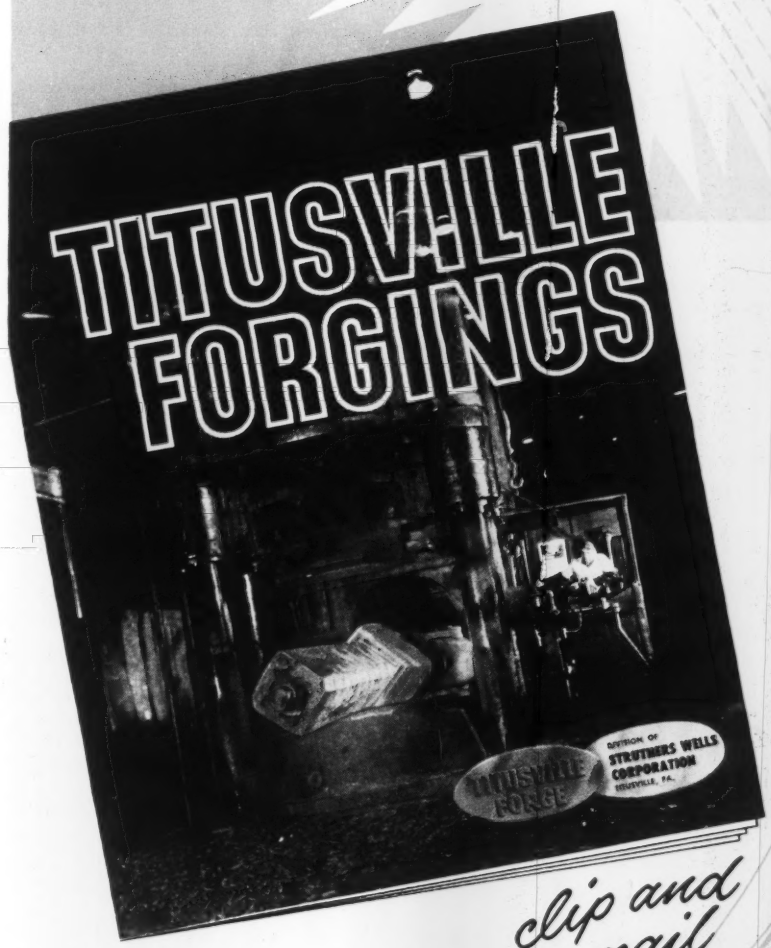
Passenger Only

	1958	1957
January	489,357	642,090
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	349,474	531,365
June	337,355	500,271
July	321,053	495,628
August	180,313	524,354
8 Mo. Total	2,743,216	4,392,871
September		284,265
October		327,362
November		578,601
December		534,714
Total		6,117,814

Week Ended	1958	1957
Aug. 9	65,614	118,864
Aug. 16	59,677	117,598
Aug. 23	25,918	123,130
Aug. 30	16,771	118,553
Sept. 6	13,208†	90,704
Sept. 13	20,000*	85,816

Source: *Ward's Automotive Reports*
†Preliminary. *Estimated by STEEL.

READY!



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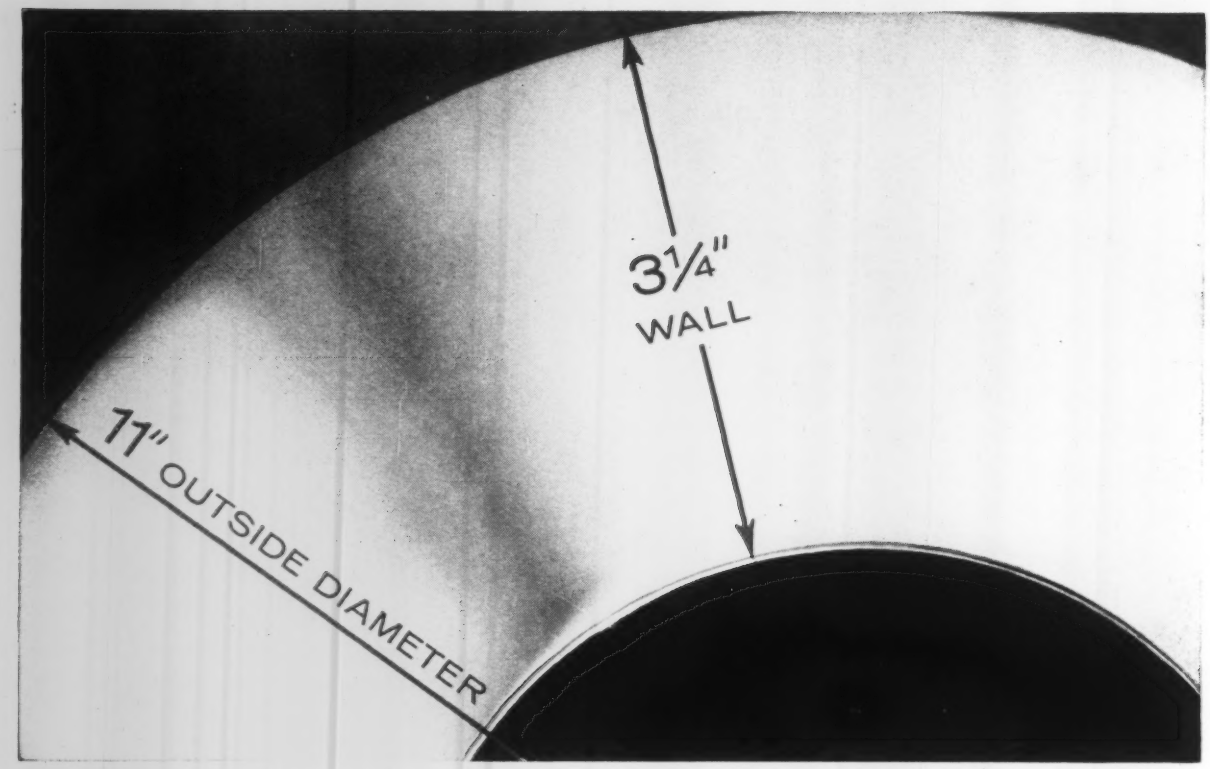

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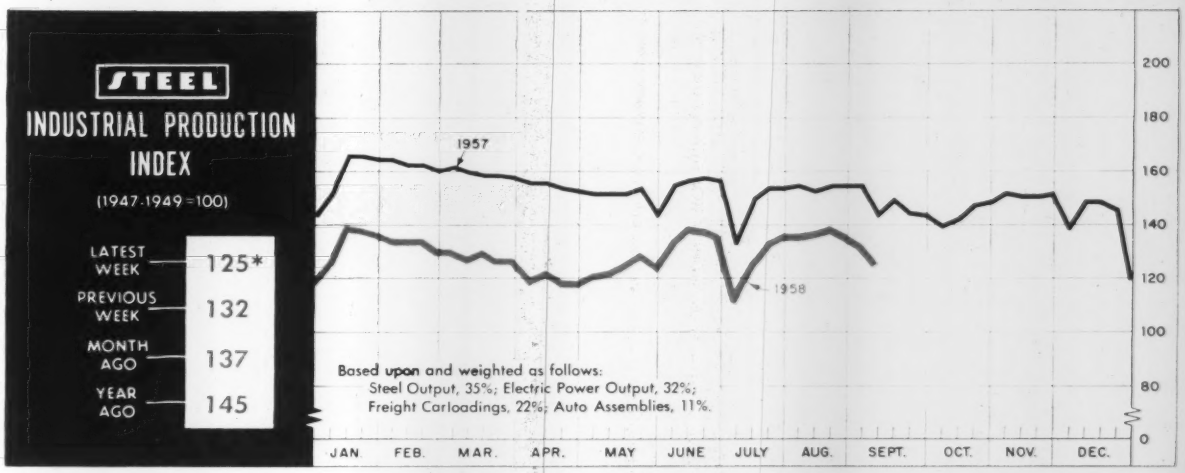

*Week ended Sept. 6.

Steel, Autos Lead Production Comeback

STEELMAKERS are taking the lead in the post-Labor Day recovery. If the rest of metalworking follows, the fourth quarter is going to be the best three-month period since the recession started.

Output of steel for ingots and castings for the week ended Sept. 14 was scheduled at about 65 per cent of capacity, good for a little over 1,751,000 tons. That would establish a new weekly high for the industry in 1958, a record almost sure to be broken next week. This increase in steel output not only reflects an improvement in metalworking, but it also acts as a stimulus to the general economy.

Worst Is Over — Metalworking has come through the summer in better condition than most observers thought possible last spring. New orders for durable goods advanced in July for the third consecutive month, seasonally adjusted, and shipments kept pace, according to the latest Commerce Department report. Instead of taking extended vacations as planned, many plant managers recalled workers. This trend has continued through August and September and will result in one of the fastest recoveries from a recession in postwar years.

Labor Day put a dent in STEEL's industrial production trend line, but it was less than in most recent years. The preliminary reading of the index for the week ended Sept. 6 was 125 (1947-49 = 100), only 7 points under the preceding week's final figure. Last year, the corresponding loss was 10 points. The main difference between the two periods results from changes in the automotive segment. In 1957, production was high enough that a day off accounted for about 3 points in the index. This year, the industry was almost shut down by model changeovers and wildcat strikes, so a day off was negligible as far as it affected output.

Reason for Optimism—The automotive industry will be the big factor in this fall's industrial pic-

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,764[1]	1,666	2,097
Electric Power Distributed (million kw-hr)	11,700[1]	12,272	11,678
Bituminous Coal Output (1000 tons)	8,350[1]	8,105	10,030
Crude Oil Production (daily avg—1000 bbl)	6,870[1]	6,863	6,807
Construction Volume (*ENR*—millions)	$284.4	$397.8	$314.1
Auto, Truck Output, U. S., Canada (*Ward's*)	19,194[1]	28,406	110,863
TRADE			
Freight Carloadings (1000 cars)	550[1]	645	648
Business Failures (Dun & Bradstreet)	246	272	262
Currency in Circulation (millions)[3]	$31,379	$31,249	$31,145
Dept. Store Sales (changes from year ago)[3]	+3%	+3%	+5%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$18.2	$19.9	$18.2
Federal Gross Debt (billions)	$278.5	$278.1	$273.8
Bond Volume, NYSE (millions)	$18.2	$23.3	$12.6
Stocks Sales, NYSE (thousands of shares)	11,800	13,578	5,479
Loans and Investments (billions)[4]	$94.3	$94.8	$86.5
U. S. Govt. Obligations Held (billions)[4]	$32.9	$33.3	$24.9
PRICES			
STEEL's Finished Steel Price Index[5]	246.65	246.65	239.15
STEEL's Nonferrous Metal Price Index[6]	198.3	198.8	209.3
All Commodities[7]	118.7	118.7	118.3
Commodities Other than Farm & Foods[7]	125.9	125.9	125.9

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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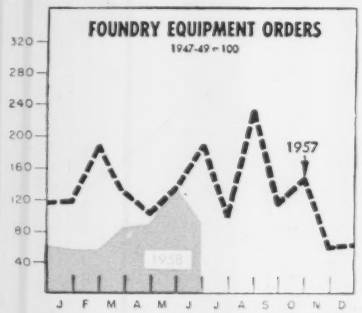
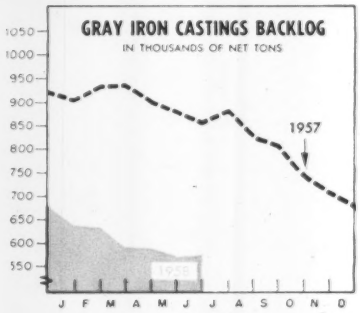




	1958	1957	1956
Jan.	57.9	117.9	195.6
Feb.	57.6	188.4	169.0
Mar.	85.9	127.0	152.7
Apr.	88.7	101.1	135.2
May	136.1	136.2	207.0
June	87.7	187.5	156.7
July	....	98.6	110.3
Aug.	....	231.3	188.3
Sept.	....	113.9	114.7
Oct.	....	145.3	122.2
Nov.	....	59.6	121.0
Dec.	....	61.4	115.6
Avg	....	130.7	149.0

Foundry Equipment Mfrs. Assn.
Charts copyright, 1958, STEEL

	Shipments		Unfilled Orders*	
	1958	1957	1958	1957
Jan.	868	1,213	638	905
Feb.	753	1,103	632	931
Mar.	796	1,133	590	935
Apr.	807	1,120	582	899
May	820	1,112	570	880
June	868	1,058	573	853
July	....	954	....	880
Aug.	....	1,076	....	828
Sept.	....	990	....	805
Oct.	....	1,100	....	740
Nov.	....	940	....	705
Dec.	....	864	....	678
Total	....	12,663		

*For sale. U. S. Bureau of the Census

ture. If there is an industry-wide strike, all four of the components of the production index will come tumbling down. If peace prevails, the trend line will cross the 1957 line for the first time this year.

Automotive production will start adding strength this week as most Chrysler Corp. and General Motors Corp. divisions up production. Chevrolet Div. is scheduled to begin '59 model output today (Sept. 15). (When the division phased out in August, the index lost 4 points.) Higher demand for steel will push operating rates close to 75 per cent within a short time. As both steel and auto output increase, greater consumption of electricity will tend to offset reduced demand for air conditioning. A healthy auto industry will stimulate shipments of parts and finished cars, and rising steel demand will push ore and coke rail shipments.

Outlook—Unless the autoworkers walk out, look for the 1958 high point (an index reading of 139) to be eclipsed later this month.

Bank Predicts Fall Gains

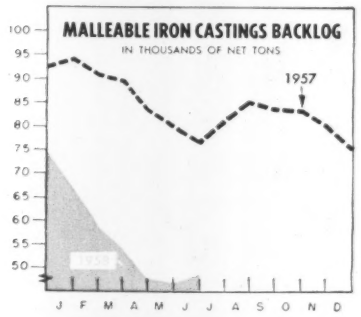
The Guaranty Trust Co. of New York also feels that autumn prospects are favorable, as long as auto production continues. The bank bases its forecast on an encouraging pattern of steel production and construction activity in July and August and prospects for an upturn in retail trade in fall months.

Sparking possibilities of such a pickup is the steady gain in personal income. This rose in July for the fifth consecutive month. Department store sales in July and August surpassed year-ago volume, but high-priced durable goods moved slowly.

Labor Department estimates of nonfarm employment show that the average worker will have enough money to lift durable goods sales in the remainder of this year—if he chooses to spend it. The number of nonfarm workers showed a smaller decline than is normal for July. The factory workweek held steady. (It normally dips in the vacation period.) Average weekly earnings of manufacturing workers increased to a level 3 per cent above one year earlier.

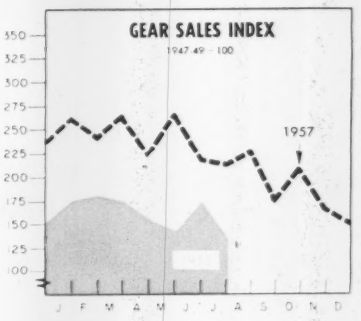
Building Beats 1957 Pace

The most recent news from the construction industry can be interpreted optimistically for the near future, but it may cause some con-



	Shipments		Unfilled Orders*	
	1958	1957	1958	1957
Jan.	62.7	86.0	67.3	93.9
Feb.	54.7	78.0	59.0	90.7
Mar.	51.7	78.0	54.3	89.4
Apr.	50.7	80.3	47.7	83.1
May	48.3	76.5	46.6	79.8
June	51.9	72.6	48.3	76.3
July	...	57.7	...	80.7
Aug.	...	65.4	...	84.9
Sept.	...	62.5	...	83.4
Oct.	...	77.7	...	83.0
Nov.	...	67.9	...	80.1
Dec.	...	60.4	...	74.9
Total	...	863.0		

*For sale. U. S. Bureau of the Census



	1958	1957	1956	1955
Jan.	174.5	259.3	245.5	140.9
Feb.	179.1	239.5	256.2	148.5
Mar.	173.7	262.4	276.5	172.8
Apr.	153.2	221.7	264.7	179.8
May	142.2	263.2	275.6	205.2
June	173.8	215.9	245.4	193.5
July	133.3	211.4	286.7	201.7
Aug.	.....	225.8	219.5	217.6
Sept.	.....	174.9	230.5	246.5
Oct.	.....	207.0	299.8	227.6
Nov.	.....	165.3	216.2	210.4
Dec.	.....	150.8	235.7	245.5
Avg	.....	216.4	254.4	198.3

American Gear Mfrs. Assn.

cern for the long term. The Labor Department reports construction put in place last month totaled $4.8 billion, a record monthly high. The new figure is 3 per cent higher than the totals for both the preceding and year-ago months. Both private and public building registered significant gains in August. But industrial still lags the 1957 period by 41 per cent.

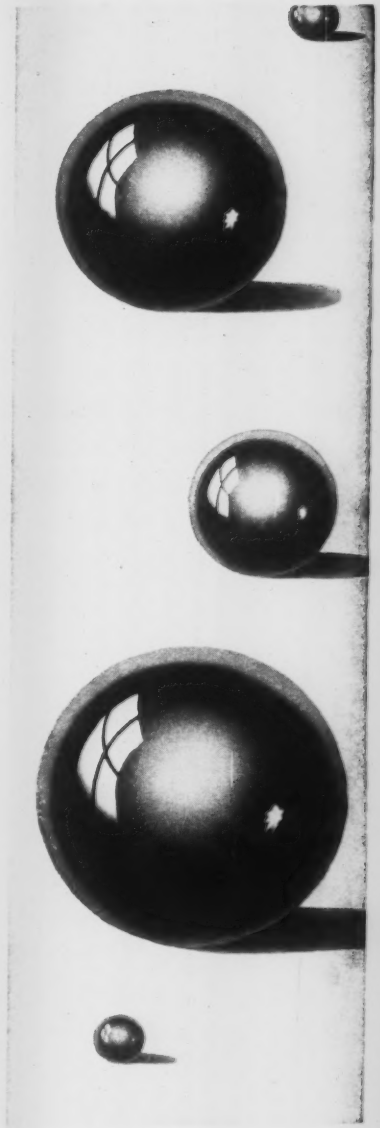
But for the first time since the construction upturn started in the spring, contract awards have eased off. The August total compiled by *Engineering News-Record* dropped 18 per cent from July's figure. Four of the last six weeks have been below corresponding 1957 levels. The drop is due mainly to a cutback in federal awards for mass housing. Highway awards are still increasing, and private construction turned up for the second straight month on a weekly average basis. But the composite picture is causing some concern for the industry if the government should suddenly turn budget conscious in this regard.

Another cause for alarm is rising costs. Hikes in lumber, steel, and wage prices pushed the *EN-R* construction and building indexes to record heights in September. The government evidently feels that through the first eight months of 1958, costs had advanced only about 1 per cent above the year-ago level, which accounts for the entire 1958 gain in dollar value of construction put in place. But unless there is considerable price shading within the industry, fall and winter construction figures will have to be examined more carefully to determine the true trend of physical volume.

Chicago Agents Optimistic

Purchasing agents in Chicago are more optimistic than they have been in well over a year. In the August report to their association, they record the highest figures for the last 12 months for inventories, employment, production, and backlogs. On the other side of the coin is a continued rise in costs and a decline in profits. The agents, by a vote of 6 to 4, favored absorbing recent price increases in steel and other materials.

The Business Survey Committee of the association points out that while business usually drops off during August, the current survey indicates a reversal of that pattern. In the four areas of improvement, the trend dates back to April or May, with best gains in backlogs.



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Cincinnati Milling Machine post

MICHAEL J. McCAUGHEY
Tuthill Pump gen. sales mgr.

MARVIN S. BANDOLI
Pendleton Tool senior v. p.

JOHN H. EIKENBERG
Revere Copper & Brass post

Albert H. Dall was appointed chief engineer, machine tool division, **Cincinnati Milling Machine Co.**, Cincinnati. He will co-ordinate engineering activities of the milling machine, grinding machine, electrohydraulics, and special machine tool divisions. In addition, he is responsible for the development research laboratory.

Michael J. McCaughey was made general sales manager, **Tuthill Pump Co.**, Chicago. He was regional sales manager-midwest.

George J. Fehrenbach was elected executive vice president, **Speer Carbon Co.**, St. Marys, Pa. He continues as secretary. **William A. Keating** was made treasurer.

Price Berrien was elected vice president and sales manager, **Anti-Corrosive Metal Products Co. Inc.**, Castleton-on-Hudson, N. Y. He was works manager of National Screw & Mfg. Co.

Robert B. Algie was appointed Chicago district sales manager for **Jones & Laughlin Steel Corp.** He succeeds **I. A. Mlodoch**, who retires Oct. 1, but will continue as a consultant. Mr. Algie was assistant manager, hot-rolled bar and shape division.

Robert H. Gathman was made general manufacturing manager, **Fisher Body Div.**, General Motors Corp., Detroit. He was manager of the metal stamping plant in Mansfield, Ohio. Mr. Gathman succeeds **E. J. Hanson**, now on special assignments.

Marvin S. Bandoli was elected senior vice president, **Pendleton Tool Industries Inc.**, Los Angeles. He was vice president-marketing.

Edward Proctor was named general manager, **Western Rolling Mills**, a newly acquired division of Yuba Consolidated Industries Inc. Formerly located at San Jose, Calif., it is being moved to Tempe, Ariz. Mr. Proctor has a temporary office at Phoenix, Ariz.

R. A. Schrage was made general manager, eastern mill, Hamden, Conn., **Detroit Steel Corp.** Former general superintendent, Detroit mill, he is succeeded by **F. L. Otto.** At the eastern mill, **S. Filimon** was made general superintendent, succeeding **J. C. Donnelly**, retired; **E. Burt** was made assistant general superintendent.

Gladwell W. Davison was appointed metallurgist of the Toledo, Ohio, plant of **National Supply Co.** He succeeds **Robert L. Adams**, chief metallurgist since 1916, retired.

A. J. Porta was elected executive vice president, **Studebaker-Packard Corp.**, South Bend, Ind.

McLain B. Smith, vice president-assistant general manager, was made vice president and general manager, Data Processing Div., **International Business Machines Corp.**, New York. He succeeds **L. H. LaMotte**, executive vice president, who continues as a member of the corporate management committee. **Gilbert E. Jones** becomes assistant general manager of the division.

John H. Eikenberg, vice president in charge of industrial relations and assistant general manufacturing manager of **Revere Copper & Brass Inc.**, New York, was promoted to general manufacturing manager. He succeeds **Louis G. Glesmann**, former vice president-general manufacturing manager, retired.

Walter E. Remmers was elected president, **Pittsburgh Metallurgical Co. Inc.**, Niagara Falls, N. Y. He succeeds **Charles F. Colbert Jr.**, who continues as chairman. **Norris B. McFarlane**, recently appointed vice president, continues in charge of operations and sales. **James A. Bright**, also recently appointed vice president, continues in charge of engineering and planning. **Luther W. Cashdollar** was appointed vice president under Mr. McFarlane. Mr. Remmers retired as vice president of Union Carbide Corp. to become president and member of the executive committee of Pittsburgh Metallurgical.

A. G. Handschumacher was named to the new post of corporate director of research and development for **Rheem Mfg. Co.**, Downey, Calif. He continues as vice president and general manager of Rheem's electronics division.

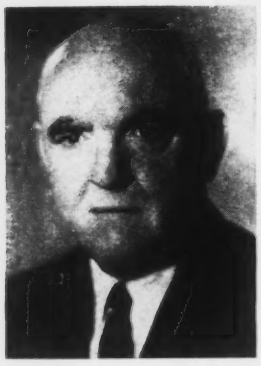
Frauenthal Div., Kaydon Engineering Corp., Muskegon, Mich., appointed **Richard Couch** vice president-sales; **W. A. Krampert** an assistant sales manager.

Mark E. Rasper was made sales manager, automotive assemblies,

DR. EDWARD E. REYNOLDS

RICHARD K. PITLER

Allegheny Ludlum research and development posts



HAROLD E. NAGLE

TALMADGE C. JONES

Yale & Towne plant operating posts

for **Moraine Products Div.**, General Motors Corp., Dayton, Ohio.

Dr. Edward E. Reynolds was named chief metallurgist, alloy research and development section, Brackenridge, Pa., Research Center, **Allegheny Ludlum Steel Corp.** He formerly directed high temperature and valve steel research at the Watervliet, N. Y., Works, and is succeeded by **Richard K. Pitler,** who was supervising metallurgist in charge of high temperature alloy research.

Mark M. Frimodig was made manager of **Michigan Chemical Corp.'s** magnesium oxide plant, now under construction at Port St. Joe, Fla. He has been in charge of the company's rare earths operations.

Albert M. Dexter was named director of metrology at **Pratt & Whitney Co. Inc.**, West Hartford, Conn.

Pressed Steel Tank Co. appointed **R. P. Ricker** Chicago district office manager; **J. W. Flynn,** New York district office manager.

At **Allis-Chalmers Mfg. Co.'s** steam turbine department, Milwaukee, **E. S. Evans** was made engineer in charge of the project section; **R. E. Ferber,** supervisor, production planning section.

Anthony G. Profet was named research and development engineer, Jack Div., **Duff-Norton Co.**, Pittsburgh.

Youngstown Sheet & Tube Co. appointed **Robert W. Allen** assistant superintendent of its Struthers, Ohio, merchant mills.

Harold E. Nagle was appointed manager of the Stamford, Conn., plant of **Yale & Towne Mfg. Co.** Former works manager, he succeeds **Hugh J. Mathews,** who becomes special assistant to the vice president. Mr. Mathews will retire in December. **Talmadge C. Jones** was made general superintendent, a new post in the Salem, Va., plant. He was superintendent of manufacturing planning, and, in addition, will direct and co-ordinate all manufacturing operations at the plant.

Noel E. Keeler was elected vice president-treasurer, **Acme Steel Co.**, Chicago. He replaces **Thornton A. Rand,** retired.

G. J. Williams succeeds **Donald L. Gibb** as sales manager of **Dow Chemical Co.'s** plastics department, Midland, Mich. Mr. Gibb will serve as a special consultant with the company's sales department.

At the **Brockport Portable Appliance** plant of General Electric Co., Rochester, N. Y., **John A. Berges** was made manager of quality control; **William A. Schmall,** manager of engineering.

Crosby W. Bean was made southwestern division sales manager, **Armco Drainage & Metal Products Inc.**, subsidiary of Armco Steel Corp. He is at Houston.

J. Dan Malone was appointed general sales manager, **Enterprise Co.**, Columbiana, Ohio. He was chief executive with H. B. Smith Machine Co.

Tubesales, Los Angeles, promoted **William C. Tagmyer** to the new post of sales manager. He was northern California agent for the company, and is replaced by **S. H. Spinali.**

Eugene Fioramonti was made western regional sales manager, Los Angeles, for **Narda Ultrasonics Corp.**

Robert W. Titgemeyer was named Los Angeles branch manager for **Carpenter Steel Co.**

F. J. McConnelly was appointed director of research and engineering at **Western States Steel Corp.**, Brawley, Calif.

Arthur C. Tharp was appointed midwest regional sales manager, mechanical goods division, **United States Rubber Co.**

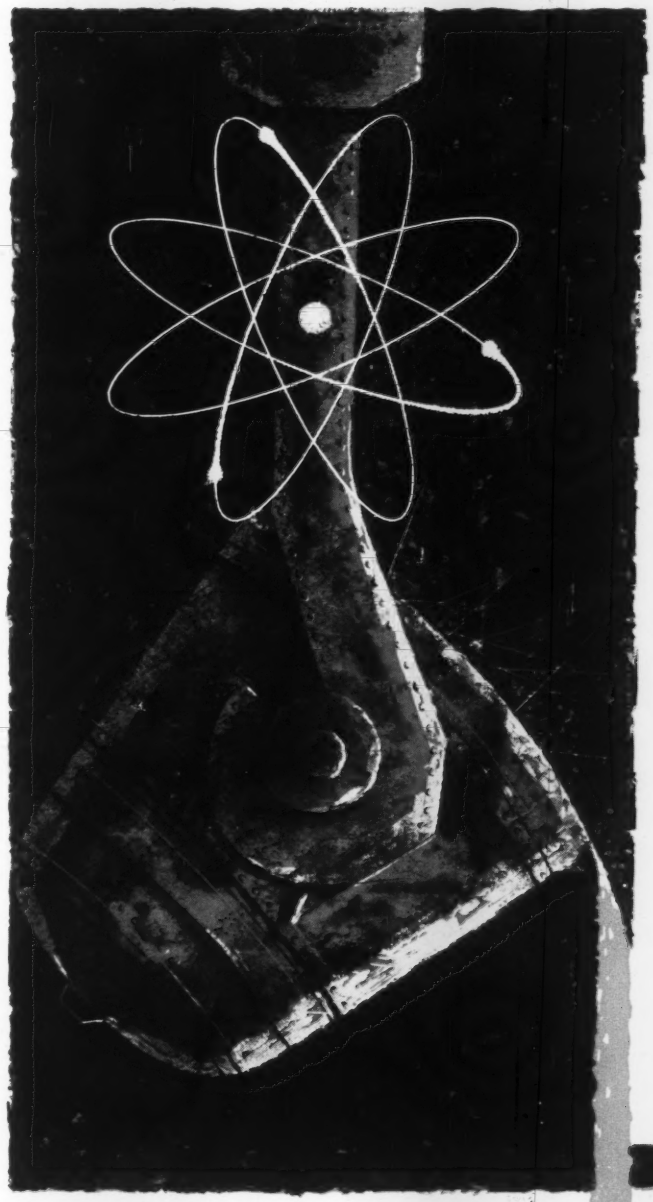
Alexander C. Forrest was appointed superintendent of the electric furnace melting department at the Los Angeles plant of **Bethlehem Pacific Coast Steel Corp.**

Thomas S. McCrory was appointed west coast regional manager of **Wheelabrator Corp.** He is in Los Angeles.

Arthur L. Kenn was made consumer products marketing manager, **Alkaline Battery Div.**, Gulton Industries Inc., Metuchen, N. J.

Kenneth T. Walden was appointed to head the Retaining Ring Div. of **Ramsey Corp.**, St. Louis. His duties include co-ordination of sales, advertising, sales promotion, and market planning.

John D. Leslie was made assistant district sales manager, New York.



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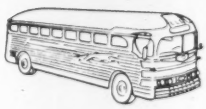

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Dow manager-Madison Div.

JOHN C. ZUK
Superior Steel p. a.

HOWARD S. GLEASON
Stromberg-Carlson plant mgr.

GILBERT M. LONG
Wheeling Corrugating sales

ROBERT P. HINDMAN
Armco plant gen. supt.

for **Haynes Stellite Co.**, division of Union Carbide Corp.

Howard S. Gleason was made manager of **Stromberg-Carlson's** electronic control systems plant in Los Angeles. He continues as assistant general manager, electronics division, for Stromberg-Carlson, a division of General Dynamics Corp.

Gilbert M. Long was appointed general sales manager, **Wheeling Corrugating Co.**, subsidiary of Wheeling Steel Corp., Wheeling, W. Va.

C. Arthur Foote was made manager of **Edgcomb Steel of New England Inc.'s** new metal service center warehouse in Woonsocket Industrial Park, Slatersville, R. I.

William W. Henderson was elected vice president-sales, **Robinson Ventilating Co.**, Zelienople, Pa.

Crucible Steel Co. of America, Pittsburgh, named **E. T. Walton** manager-customer technical services; **James A. Kearney**, manager-materials and processes.

Robert P. Hindman, assistant general superintendent of the Butler, Pa., Works, **Armco Steel Corp.**, was promoted to general superintendent of the plant. He will succeed **E. T. Mitchell**, who retires Oct. 1.

Frank G. Gregory was made assistant superintendent, open hearth division, Lackawanna, N. Y., plant, **Bethlehem Steel Co. Edward I. Lorenzi** was made superintendent of No. 1 open hearth to succeed Mr. Gregory.

Clarence L. Krueger was made general superintendent, **S. B. Whistler & Sons Inc.**, Buffalo. He succeeds the late **George Besch.** Mr. Krueger was with the Stromberg-Carlson Electronic Center in Rochester, N. Y.

Consolidated Electrodynamics Corp., central engineering division, Pasadena, Calif., appointed **Francis T. Greenup** manager of engineering services and manager of the Alectra department; **George M. Slocomb**, assistant chief development engineer; **E. James Penrose**, administrative manager.

Robert J. Jacobs was elected vice president of **Black-Clawson Co.**, New York. He is general manager, Dilts Div., Fulton, N. Y.

Dow Chemical Co. promoted **Herbert H. Lyon** from controller to manager of its Madison, Ill., division. He succeeds **Hubert Fruehauf**, recently named manager of Dow's new magnesium products department. Assistant division managers for the Madison division are: **Gerhard Ansel**, former technical director; **Clare S. Harris**, former production manager; **Frank C. Mansfield**, former assistant to the division manager.

John C. Zuk was appointed purchasing agent for **Superior Steel Div.**, Copperweld Steel Co., Carnegie, Pa. He was assistant purchasing agent.

Edward A. Malling was made vice president - marketing, **Flexonics Corp.**, Maywood, Ill. He was manager of marketing for General Electric Co.'s specialty electronic components department.

Moe Wind was made assistant sales manager, **Polytechnic Research & Development Co. Inc.**, Brooklyn, N. Y.

Robert Zufra, comptroller for **National Metal Abrasive Co.**, Cleveland, was promoted to assistant treasurer.

Kenneth P. House was appointed manager, tubular sales division, **Wheeling Steel Corp.**, Wheeling, W. Va. He succeeds **O. I. Strickland**, retired.

Kenneth R. Waltz was made chief engineer of **George L. Nankervis Co.**, Detroit. He was assistant sales manager.

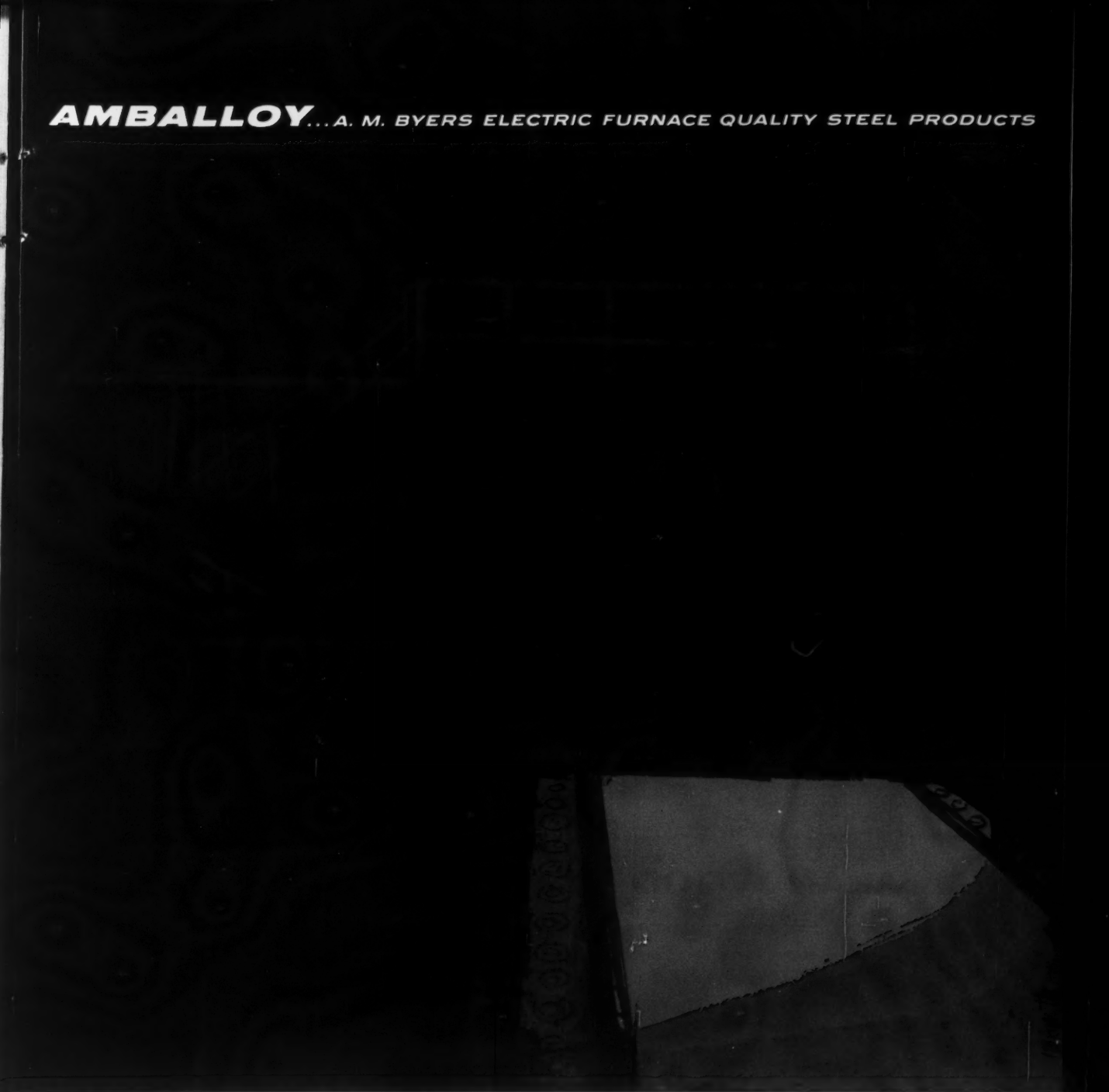
Philip E. Mitchell was appointed industrial sales engineer, Cleveland, for **De Laval Separator Co.**

OBITUARIES...

George A. Borchik, 60, general manager, **Jordon Electric Products Div.**, Cleveland, Electric Storage Battery Co., died Sept. 2.

Arthur F. Bowers, 79, president, **Industrial Heating & Engineering Co.**, Milwaukee, died Aug. 29.

AMBALLOY... A. M. BYERS ELECTRIC FURNACE QUALITY STEEL PRODUCTS



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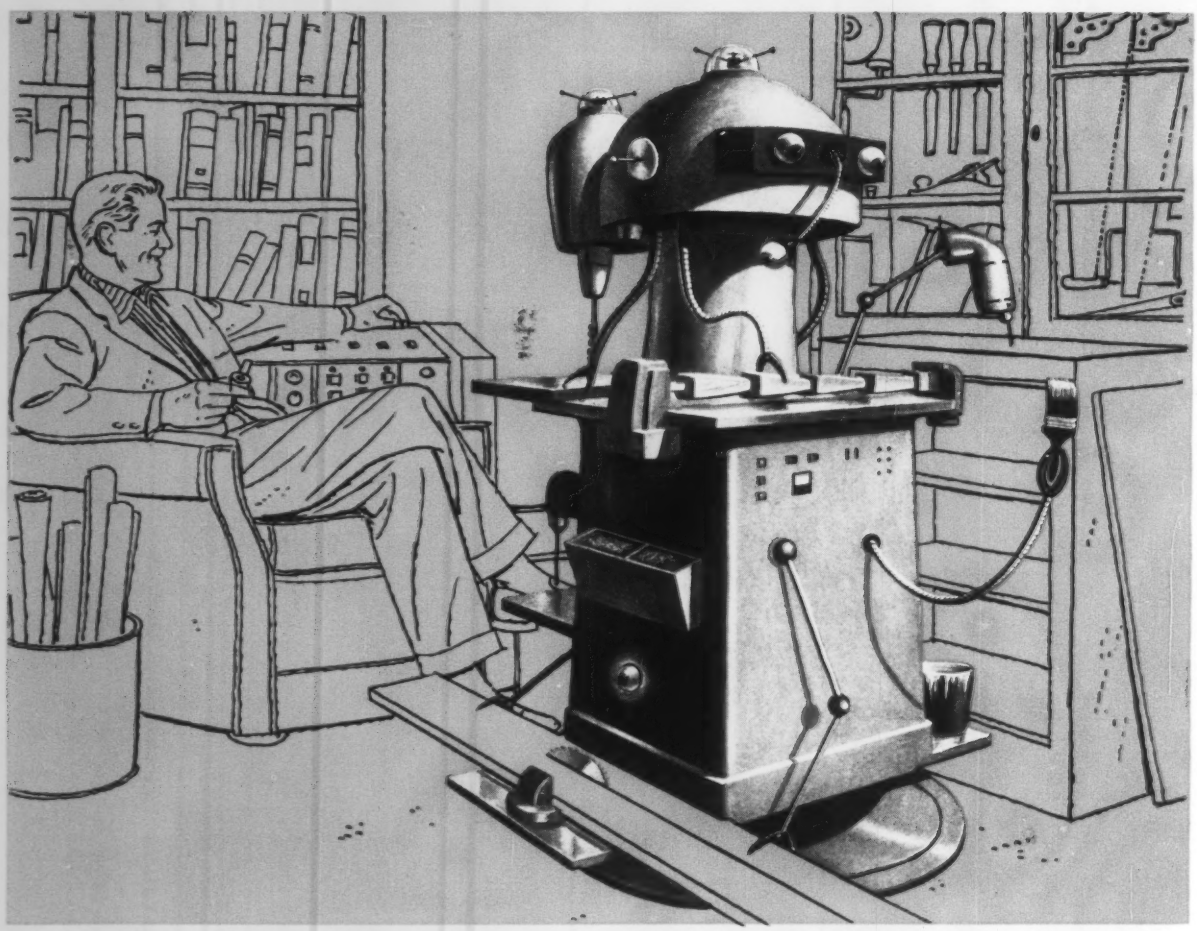
We'll speed your order from mill to job site, with special attention to your deadline commitments. Various grades of Byers carbon, alloy and stainless steel plates, with the AMBALLOY stamp of quality, wear well in ships, trucks, railroad cars, automobiles, agricultural tools, conveyor and mining equipment. There's a list as long as your arm.

Cost control and an ever-increasing range of plate sizes make us competitive on any order. Write or call us—today—for the name of the Byers metallurgist nearest you. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

A growth company with the emphasis on quality and service **A. M. BYERS COMPANY**



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An ALAN WOOD Representative can help!

How about a Home-Carpenter's-Helper? Like to make some for sale? Their design could involve some complicated problems . . . not to mention their production. Better call your A.W. Representative for advice. Your A.W. Representative may order a special metallurgical study of your problems and bring about savings that build new profits and greater potential. He can provide you with the latest information on cold rolled steel and its application, plus experienced advice on the gauge, size and type to order. Call him today. Your A.W. Representative is always available...never out of touch with your location.

IRON PRODUCTS
"Swede" *pig iron*

STEEL PRODUCTS
Plates (sheared)
A.W. Dynalloy (high strength steel)
Hot rolled sheets
Hot rolled strip
Cold rolled sheets
Cold rolled strip

ROLLED STEEL FLOOR PLATE
A.W. ALGRIP *abrasive*
A.W. SUPER-DIAMOND *pattern*

COAL CHEMICALS

A.W. CUT NAILS
Standard & Hardened

MINE PRODUCTS
Iron ore concentrates
Iron powder
Crushed stone
Sand

COKE
Foundry, industrial & metallurgical

PENCO METAL PRODUCTS DIVISION
Steel cabinets, lockers & shelving

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Japan To Get Mill

Mesta builds automatic rolling equipment; it will be controlled by Westinghouse Prodac system

MESTA Machine Co., Pittsburgh, is building an automatic rolling mill for the Mizue Works of Nippon Kokan K.K. near Tokyo.

The semicontinuous hot strip mill will include a 4-high universal reversing roughing mill controlled by Westinghouse Electric Corp.'s Prodac (programmed digital automatic control) system. It will enable the mill to perform a complete rolling schedule in accordance with information punched on a single IBM card.

Any rolling schedule up to nine passes may be preselected, with adjustments for horizontal and edger rolls and mill reversals controlled automatically. When desired, the mill can be manually operated.

Mesta is also furnishing a 2-high scale breaker, rotary drop shear, scale breaking pinch rolls, five 68-in. 4-high hot mill finishing stands, two hot strip downcoilers with double coil transfers, descaling systems, and lubrication systems.

Bearing Firm Expanding

Miniature Precision Bearings Inc., Keene, N. H., has completed a $300,000 addition to its production facilities. Horace D. Gilbert, MPB president, says the 25,000 sq ft addition increases the firm's manufacturing space by 50 per cent. MPB is also constructing a new plant in Lebanon, N. H., for its Split Ballbearing Div.

Firm To Build Locomotives

Rogers Bros. Corp., Albion, Pa., has entered the industrial locomotive field. Initially, the company will design and manufacture diesel-hydraulic and diesel-electric locomotives in 5 to 40-ton sizes for track gages from 21 to 56.5 in.

Lab Facilities Consolidated

Duquesne Works, U. S. Steel Corp., Duquesne, Pa., has opened a new metallurgical testing laboratory, says J. W. Price Jr., plant general superintendent.

The laboratory, conducting tests on alloy, stainless, and special carbon steels, is a consolidation of testing facilities formerly scattered throughout the Duquesne Works. Units include process control, control laboratory, inspection, and research and development.

Forging Facilities Growing

United States Steel's Homestead District Works, Homestead, Pa., is expanding its forging production facilities, says Robert W. Graham, plant general superintendent.

The project involves the installation of seven vertical heat treating furnaces, a car bottom furnace, and three large turning and boring lathes. The furnaces will be housed in a building under construction.

Completion of the facilities, which are part of U. S. Steel's Pittsburgh District modernization and expansion program, is scheduled for April, 1959.

Vulcan Ups Capacity

Vulcan Mold & Iron Co., Latrobe, Pa., has completed a two-year, $500,000, expansion program which raises productive capacity to 185,000 tons a year—a 40,000-ton increase. The major portion of the expansion is at Vulcan's Lansing, Ill., plant. Projects at the Latrobe plant had two primary objectives: To improve efficiency and prepare the firm for further growth.

Vee Bee Adds Lines

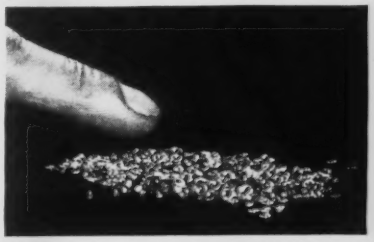
Vee Bee Mfg. Co., Muskegon, Mich., has begun producing boring bars and cutters. The line includes heat treated, high alloy steel bars, and cutters which are interchangeable without removing the bar from the machine. Rough and finish boring and combination tools are also included.

Chicago Iron Firm Expands

Chicago Bridge & Iron Co., Chicago, is enlarging its facilities at Greenville, Pa., and Salt Lake City, Utah. A structural fabrication building and two open crane runways will be built at Greenville. The Salt Lake City facilities will get a build-

(*Please turn to Page* 134)

when ONE THOUSAND



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that's MINIATURIZATION!

We produce precision *turned* nuts for all types of "miniaturized" equipment. For example

. . . the nuts shown above are identical in type and accuracy. The miniature size, measuring 1/8 x 3/64", weighs only 0.11 lbs. per thousand. The conventional nut is 1-1/16 x 21/32" and weighs 110 lbs. per M. This 1000-to-1 ratio is typical of our versatility.

When your fastening problems involve small nuts . . . or if you're looking for better price, quality and delivery . . . let Fischer quote your next order.

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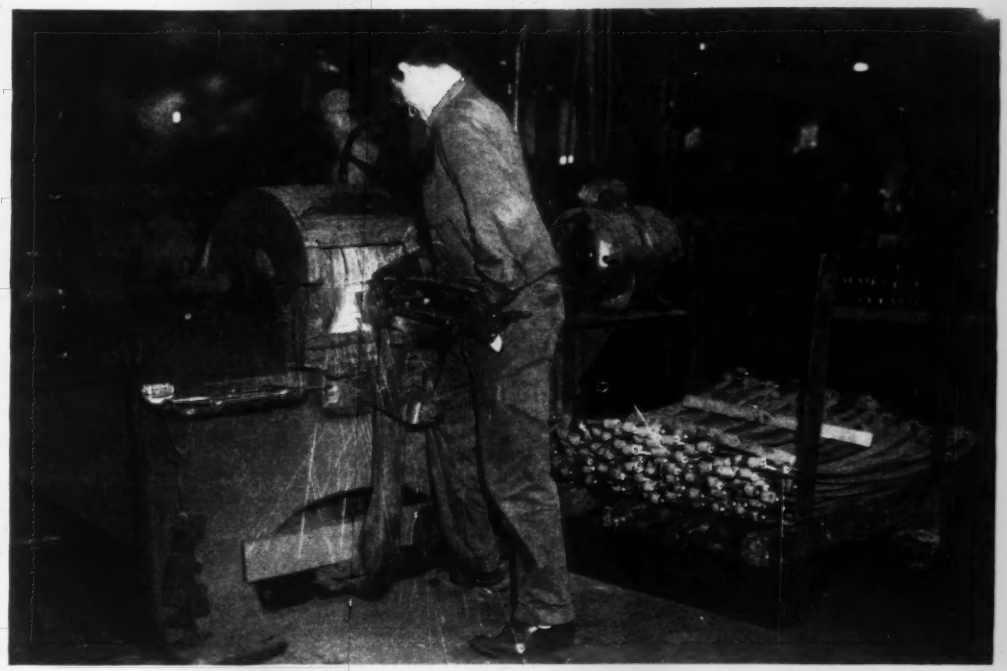
How Warren Pouyer cut grinding

Six years as a tool and die maker gave Bay State's Warren Pouyer a basic knowledge of precise metal working problems that many an "expert" would envy. For the last nine years, he has specialized in abrasives and has gained a tremendously wide knowledge of grinding methods and materials.



Moog operator gets heavy, rapid stock removal using Bay State wheel to grind eye of automobile spring leaf.

costs 1/3 at Moog Industries

Too many wheels were being used up too fast. That was the basic problem in the spring eye grinding operation at Moog Industries, St. Louis, Mo. A leading manufacturer of truck, trailer and automobile springs, Moog makes a complete line of front-end, chassis parts . . . and in this highly competitive business, keeping grinding costs down is vitally important.

So they called in Warren Pouyer of Bay State distributor Mill Supply & Machinery Company and he spotted the trouble right off the bat: disc grinding wheels of a specification that looked as if it *ought* to be right but wasn't. Pouyer specified the proper Bay State wheel using a semi-friable type of aluminum oxide with a unique combination of grit sizes. Production increased 33% per wheel without loss of operation speed.

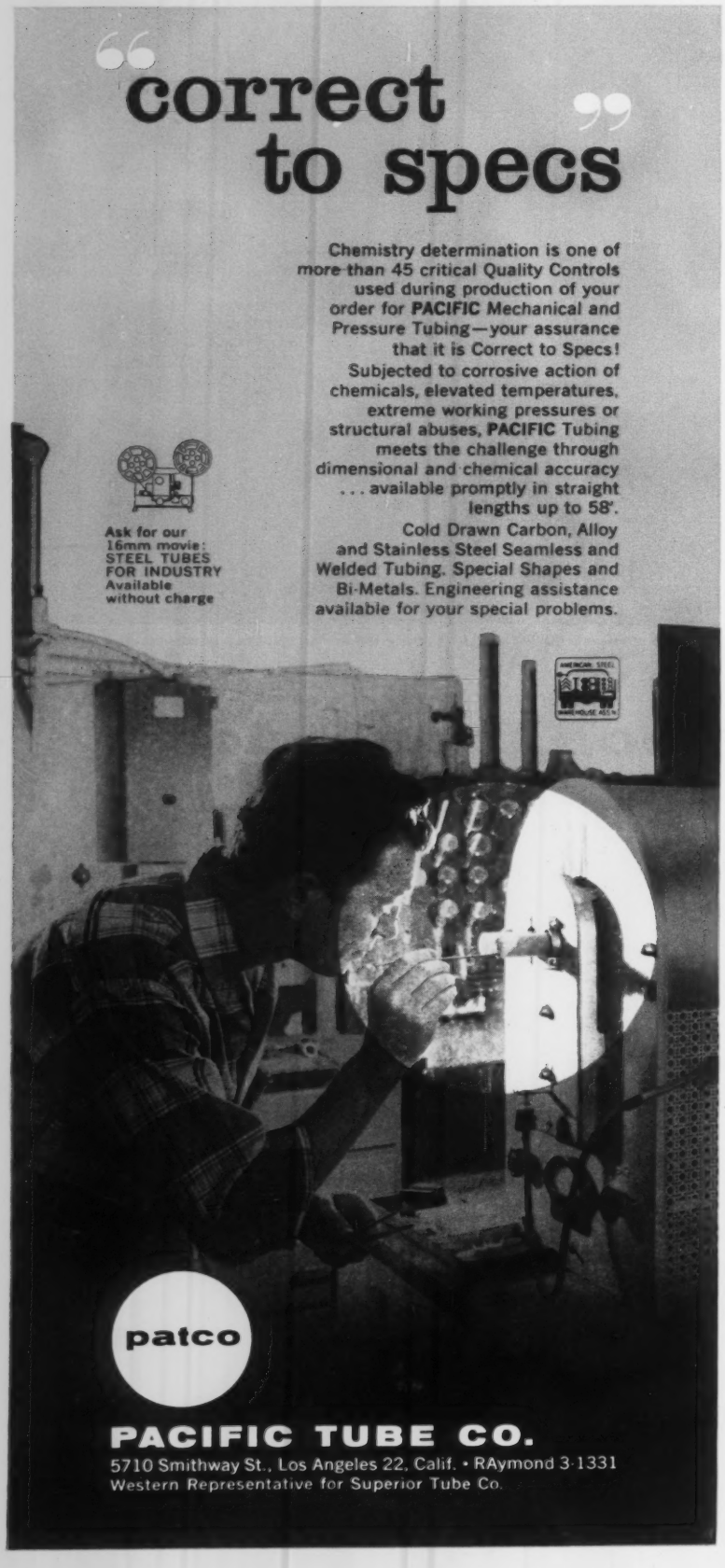
Since then, the Bay State wheel has been competitively tested over and over again and it has come out on top every time . . . a tribute to Warren Pouyer's ability to specify exactly the right wheel, in this case the first time, and to Bay State's ability to reproduce a given spec *exactly* and *consistently*.

Warren Pouyer doesn't solve all his grinding problems as quickly as this. Like all Bay State representatives, he's trained to study every problem *thoroughly*. And whether a particular problem has a simple solution or a tricky one, you can be sure *your* Bay State man will stick to it until he works out a practical, economical answer. *Better grinding at lower cost—that is his business.*

BAY STATE WHEELS of PROGRESS

BAY STATE ABRASIVES

Bay State Abrasive Products Co., Westboro, Massachusetts.
In Canada: Bay State Abrasive Products Co., (Canada) Ltd., Brantford, Ontario.
Branch Offices: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh. *Distributors:* All principal cities.


"correct to specs"
Chemistry determination is one of more than 45 critical Quality Controls used during production of your order for PACIFIC Mechanical and Pressure Tubing—your assurance that it is Correct to Specs!
Subjected to corrosive action of chemicals, elevated temperatures, extreme working pressures or structural abuses, PACIFIC Tubing meets the challenge through dimensional and chemical accuracy . . . available promptly in straight lengths up to 58'.
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Western Representative for Superior Tube Co.

(*Concluded from Page 131*)

ing equipped with five-ton cranes, for fabrication of small details parts, fittings, accessories, and structural steel.

Adjusts Carbide Pricing

Firth Sterling Inc., Pittsburgh, established a new pricing system on its tungsten carbide tips, tools, and inserts, effective Sept. 15. Some prices are lower, some higher. The prices are listed in a new catalog released today.

GM Lab Has New Unit

General Motors Research Laboratories, General Motors Corp., Warren, Mich., has formed an Electronics-Instrumentation Dept., says Dr. Lawrence R. Hafstad, Research Laboratories head. The department will service the 15,000 instruments in the labs and assist in basic engineering research. The department will be headed by Albert F. Welch.

Fabricating Shop Planned

New North Point Co. Inc., Baltimore County, Md., plans to build a one story, 5000 sq ft steel fabricating shop, says Oscar Meyer, president.

GE Lamp Consolidates

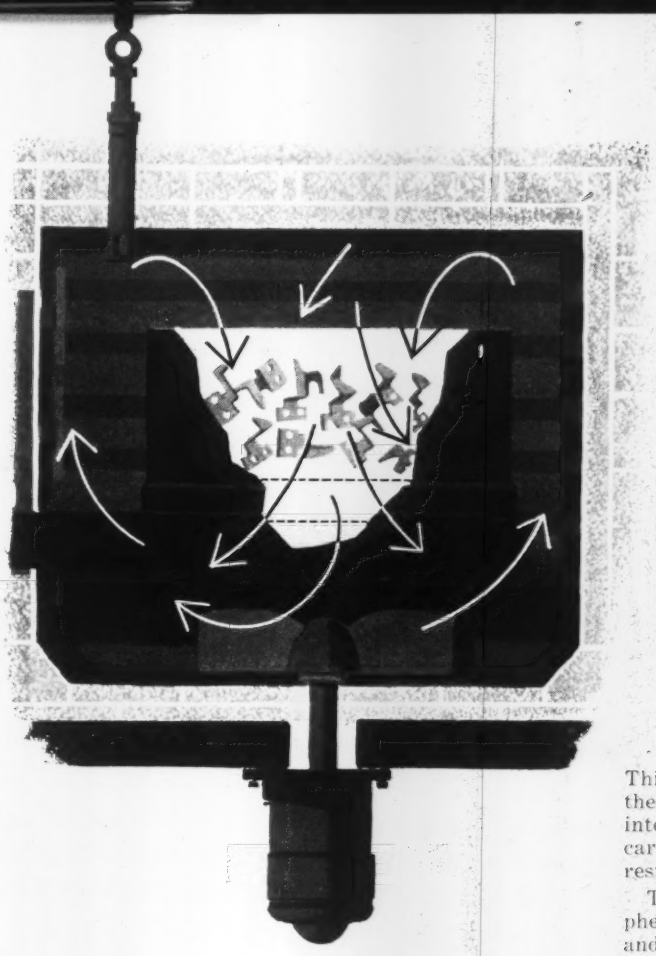
General Electric Lamp Div., General Electric Co., Cleveland, has consolidated its Lamp Leads and Bases Dept. with the Lamp Wire and Phosphors Dept. It is called Lamp Metals and Components Dept. Comprising nine manufacturing facilities, the new department will be headed by Robert F. Johnson.

Lyon Begins Deskmaking

Lyon Metal Products Inc., Aurora, Ill., is entering the desk field. The new line of office desks and tables will be sold through Lyon's regular dealers. Features: All-welded construction and stainless steel trim.

Firm Discontinues Foundry

Baker Perkins Inc., Saginaw, Mich., will halt its captive foundry operations Sept. 30. The company has reduced the use of cast iron



it's new!

The L&N Tricarb method with controlled atmosphere . . . temperature . . . quench

This precision furnace is the most versatile in the history of heat treating. It can be used interchangeably for controlled case carburizing, carbonitriding, homogeneous carburizing, carbon restoration, or hardening.

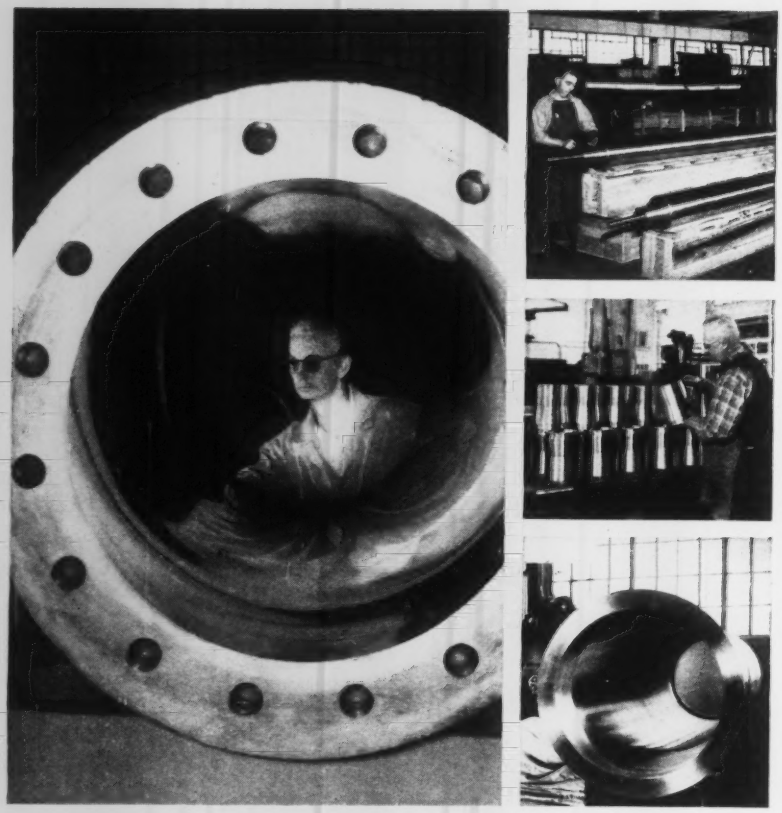
The unique combination of Microcarb atmosphere control, Speedomax® temperature control and the controlled quench, makes possible significant quality improvements in production heat treating. New, efficient, L-O voltage radiant tube heaters are rugged, requiring minimum maintenance—are not subject to failures from carbon deposits when the furnace is used for carbonitriding without Microcarb control.

In many instances the Tricarb method has proved a practical solution to lower production costs . . . higher quality . . . more process automation . . . elimination of rejects and spoilage. In others it makes thoroughly practical the handling of many previously impossible or difficult heat treatments on a reproducible, production basis.

Folder T-620(17) explains the Tricarb Method. Write us at 4957 Stenton Ave., Phila. 44, Pa.

LEEDS Instruments NORTHRUP Automatic Controls • Furnaces

When small cams for electrical instruments are carburized in this Tricarb furnace, 6¢ per piece is saved on subsequent buffing operations because work comes from the furnace so clean.



You get greater strength . . . with

SHENANGO CENTRIFUGAL CASTINGS

Downtime, rejects, heavy maintenance costs and too-frequent replacements can be cut down *appreciably* by the use of Shenango extra-strong centrifugal castings.

They provide a finer, *pressure-dense* grain . . . with all the weakening defects eliminated, such as blowholes and sand inclusions.

Though built to stand the most rugged service, each Shenango casting is precisely-dimensioned to your exacting requirements. Whether you need rolls, bearings, bushings, mandrels, sleeves, liners, or any other essentially symmetrical part . . . *specify Shenango* for greater strength, greater wear-resistance, greater lasting power and greater savings, year after year.

Informative bulletins are yours for the asking. Write to: *Centrifugally Cast Products Division,* The Shenango Furnace Company, Dover, Ohio.

SHENANGO CENTRIFUGAL CASTINGS

COPPER, TIN, LEAD, ZINC BRONZES • ALUMINUM AND MANGANESE BRONZES
MONEL METAL • NI-RESIST • MEEHANITE* METAL • ALLOY IRONS

in its own products and has fewer demands from outside sources, says E. A. Turner, executive vice president. Foundry equipment will be sold and the space will be converted to manufacturing activities of Petersen Oven Co., Franklin, Ill., which recently merged with Baker Perkins.

ASSOCIATIONS

American Foundrymen's Society has elected William D. McMillan, active national director. He is supervisor of metallurgy, McCormick Works, International Harvester Co., Chicago.

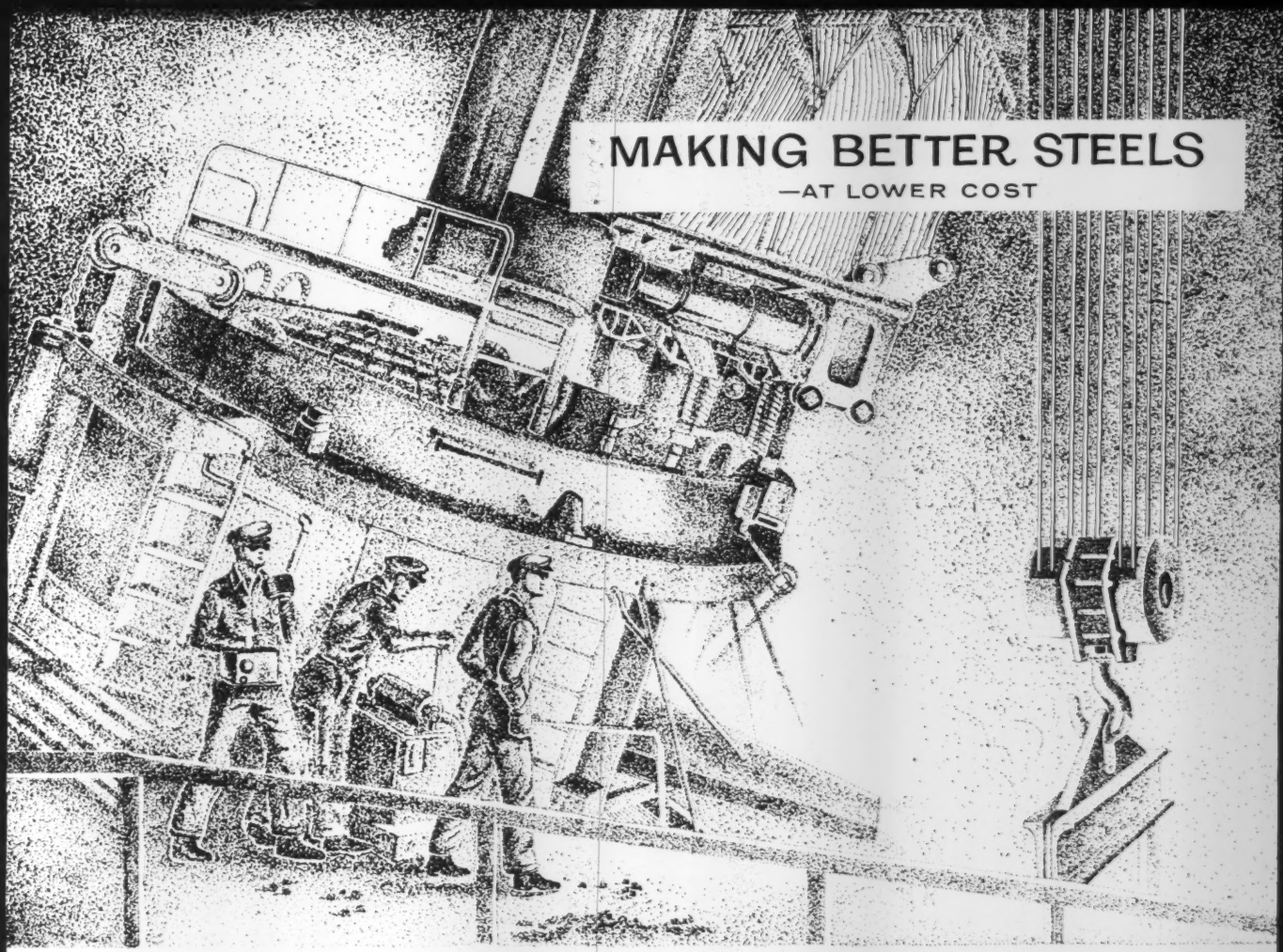
American Zinc Institute Inc. has appointed Dr. Schrade F. Radtke as director of the research program sponsored by lead and zinc producers throughout the world. Dr. Radtke, former director of the metallurgical research laboratories of Reynolds Metals Co., Richmond, Va., will develop plans governing research projects of allied groups.

CONSOLIDATIONS

Gabriel Co., Cleveland, a producer of automotive, communication, and aircraft products, proposes to acquire Talco Engineering Corp., Mesa, Ariz., a producer of rocket and missile devices. John R. Briggs, Gabriel's president, and Franz G. Talley, Talco president, say the move has yet to be ratified by stockholders.

Controls Co. of America, Schiller Park, Ill., will change the name of its newly acquired Redmond Motors of Canada to Redmond Electric Motors of Canada Ltd. Redmond's new president is James W. Tweedy, vice president of the parent company.

Daystrom Inc., Murray Hill, N. J., bought Industrial Gauges Corp., West Englewood, N. J., and related patents owned by Charles B. Zimmer, president. Industrial, a pioneer in the manufacture of noncontact gages which use infrared, x-rays, or visible light, will become the Industrial Gauges Dept. of



TAPPING

. . . a heat at just the right pouring temperature is typical of the melter's technical mastery. Another important factor in making better steels at lower cost is the revolutionary **Unitrode® nipple** which "welds" the joints of **GLC Graphite Electrode columns.**

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60-DAY MONEY-BACK OFFER!

Bailey-built HEAT PROVER* Analyzer

Size: 10⅞″W, 11¼″H, 8¼″D. Weight: 25 lb.

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Here's the easy, low-cost way to fuel savings through complete combustion analysis.

This portable, but extremely accurate instrument, instantly measures the volumetric percentages of oxygen and combustibles present in furnace and waste gases. It precisely determines fuel-air relations, so you can make adjustments for optimum combustion efficiency.

Try it for 60 days. If you're not convinced it will, in short order, pay for itself in fuel savings, return it, and we'll refund your money.

Look at these features:

- **Ranges: Oxygen: 0 to 4%, and 0 to 20%; Combustibles: 0 to 4%, and 0 to 20%; Temperature: 0 to 2500° F; 115v/60c service.**
- **Accurate within ±0.5% on 0-20% scale; and 0.1% on 0-4% scale by volume of oxygen and combustibles in gas sample.**
- **Response: Indicating gages respond to 63% of total change of oxygen and/or combustibles in less than 15 seconds.**
- **No separate fuel supply to become exhausted and require replacing. HEAT PROVER automatically generates its own hydrogen supply for oxygen measurements. Addition of distilled water is only requirement.**
- **Provision included for temperature measurement, using chromel-alumel thermocouple.**
- **Born of 20 years' experience with gas analyzers.**

$980.00

Includes HEAT PROVER and Standard Accessories. Offer valid in continental United States only.

STANDARD ACCESSORIES include renewable gas sample filter (above), 1½″ OD, 12″ length. Also included: convenient, protective, padded carrying case, 50 ft. heavy-duty power cord, 8 oz. sodium hydroxide solution for hydrogen generator, and instruction book.

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G49-1

Instruments and controls for power and process

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BAILEY METERS

Daystrom-Weston Industrial Div., under Thomas A. Allinson, division president.

NEW PLANTS

Ceco Steel Products Co., Chicago, will build an $11-million steel bar mill at Lemont, Ill. The plant will be operated by a wholly owned subsidiary, Lemont Mfg. Corp.

Griffin Wheel Co., American Steel Foundries subsidiary, Kansas City, Kans., has opened a steel railway wheel plant at Muncie, Kans. The 360,000 sq ft plant has two 11-ton electric furnaces and is expected to be in full production by Jan. 1. Harry A. Brown, formerly superintendent of Griffin's Kansas City iron wheel plant, will manage the new facility.

Chain Belt Co., Milwaukee, has broken ground for its Madison, Ind., plant. The Madison facility (a 115,000 sq ft main plant and a 20,000 sq ft sheet metal warehouse) will make Chain Belt's Rex line of concrete road paving and finishing machinery. Production is scheduled to begin early in 1959.

Soule Steel Co., San Francisco, will construct a steel rolling mill at Dominguez, Calif., near Los Angeles. Its capacity: 36,000 ingot tons a year. Completion is scheduled for fall, 1959.

Linde Co., a division of Union Carbide Corp., has put a new oxygen-producing plant into operation at U. S. Steel Corp.'s Gary, Ind., Works. The unit will produce 94 million cu ft of oxygen a month.

NEW ADDRESSES

Mannesmann - Meer Engineering & Construction Co. Inc., Easton, Pa., has moved its offices to 755 Wick Ave., Youngstown, and has changed its name to Mannesmann-Meer Inc. The president's office was moved to Canada House, 680 Fifth Ave., New York 19, N. Y.

Valley Plating Co., Dayton, Ohio, will move to 109 S. Belve-

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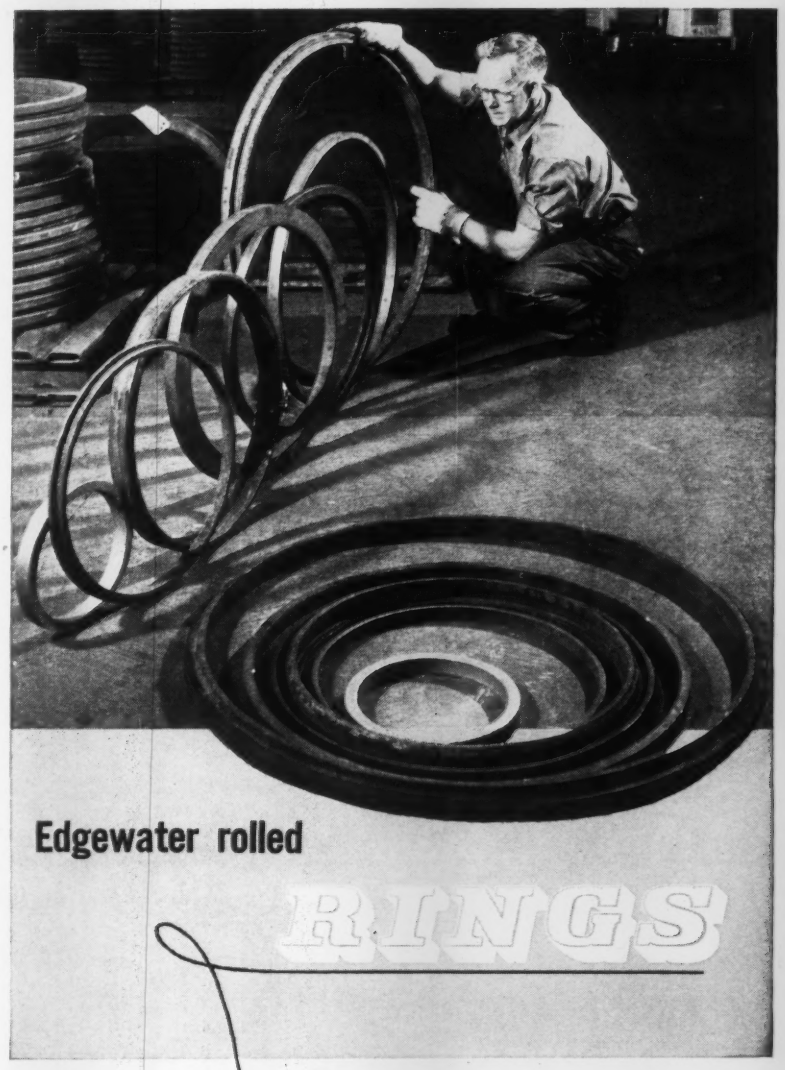

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reduce machining time
save critical materials
assure dependable uniformity

SECURITY pretty well sums up the reasons why ring users specify EDGEWATER. High quality means security in the application. Accurate forming to close tolerances provides security from excessive machining costs. Prompt deliveries of a wide variety of ring sections and sizes spells security from expensive delays.

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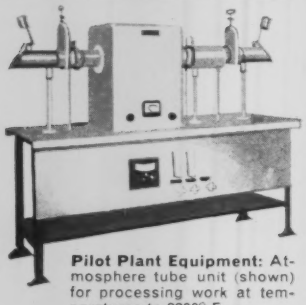
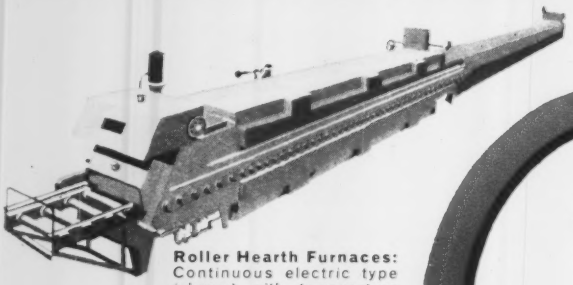
You'll find LINDBERG equipment just right for the specific job

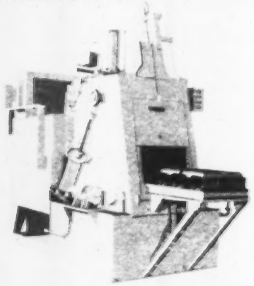


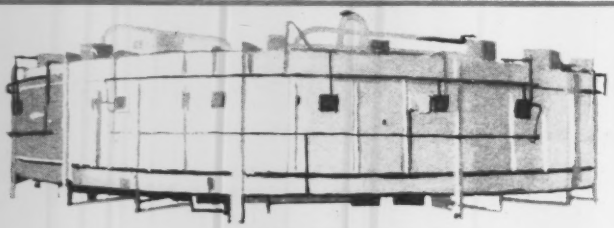
Pilot Plant Equipment: Atmosphere tube unit (shown) for processing work at temperatures to 2200° F.



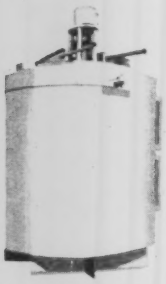
Roller Hearth Furnaces: Continuous electric type (shown) with temperature range 1300° to 2100° F.

Automatic Carbonitriding Furnaces: Automated integral quench type (shown) with CORRTHERM electric elements.

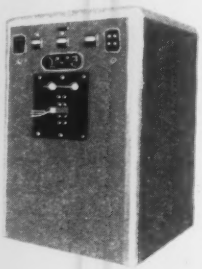




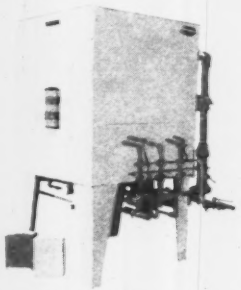
Rotary Hearth Furnaces: Doughnut type field-installed gas-fired furnace (shown) with capacity of 13,000 lbs. per hour.



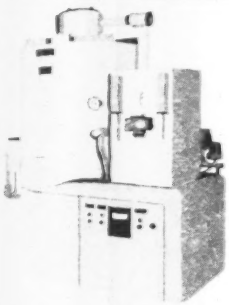
Vertical Type Furnaces: Carburizing and hardening furnace (shown) with CORRTHERM electrical heating elements.



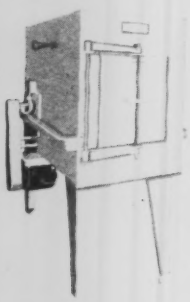
HF Induction Heating Units: Available in 5, 10, 25 and 50 KW units.



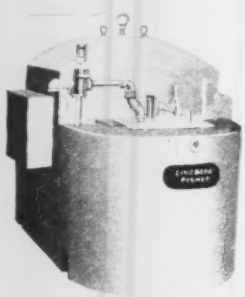
Ceramic Kilns: Gas-fired periodic kiln (shown) with temperature range to 3250° F.



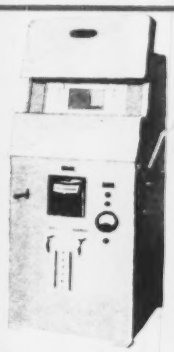
Atmosphere Generators: Hyen generator (shown) for endothermic atmospheres. Generators for all required atmospheres.



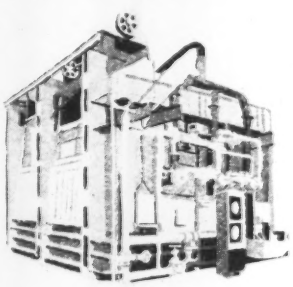
Tempering Furnaces: Box type Cyclone (shown). Temperature range to 1250° F.



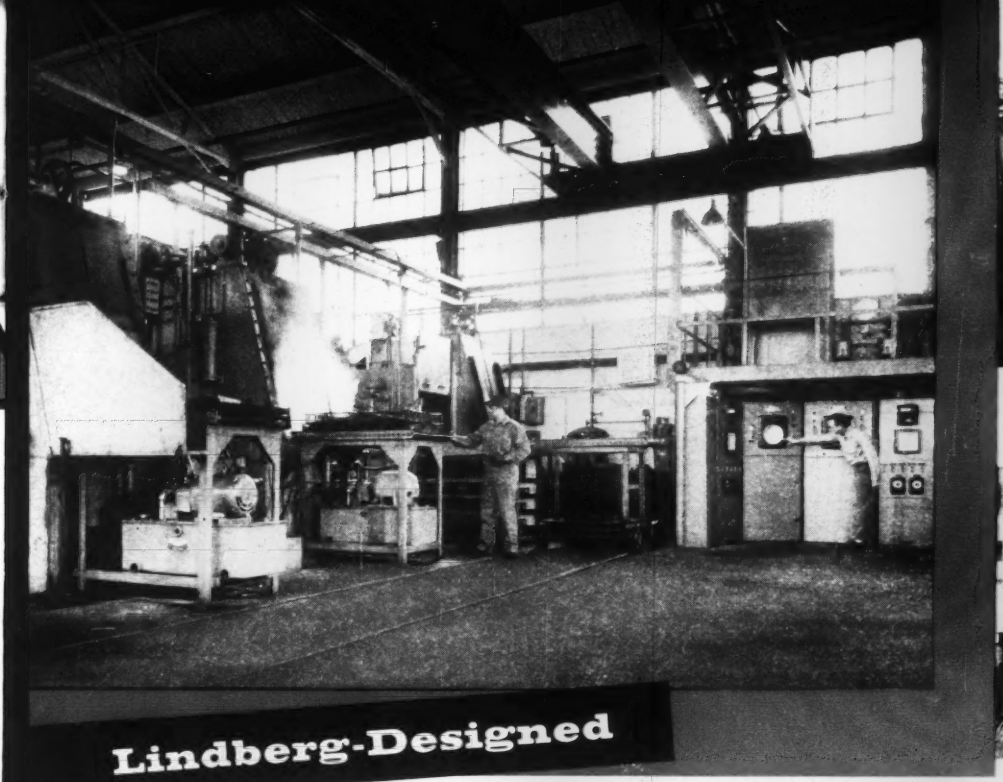
Melting and Holding Furnaces: Electric resistance furnace (shown) with capacities of 750 lbs. to 1500 lbs.



Laboratory Equipment: One-unit box furnace (shown), muffle or for non-oxidizing atmosphere with temperature range to 3000° F.

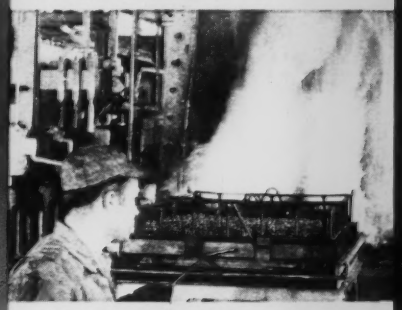


Aluminum Reverberatory Furnaces: Twin-chamber melting and holding furnace (shown) with 45,000 lbs. capacity.



Lindberg-Designed

Charles Hewitt, President of Dayton, says, "The Lindberg installation has kept our production at a consistently high quality level."

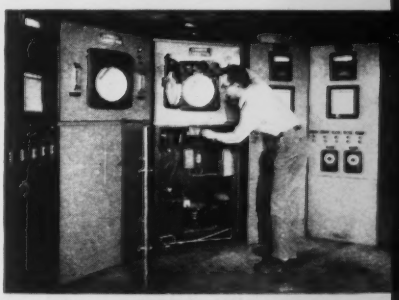


Work loads are positioned manualiy, but entire furnace operation is fully automatic.

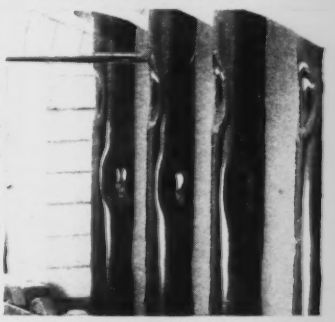
Unique Installation Cuts Heat Treating Costs and Improves Quality at Dayton

Here is a remarkable set-up for general heat treating now in operation at Dayton Forging & Heat Treating Company, Dayton, Ohio. Two integral quench atmosphere furnaces, largest of this type ever built by Lindberg, and one atmosphere tempering furnace in a "three-in-a-row" arrangement that simplifies transfer operation. Combined with Lindberg Carbotrol and Hyen generator, the entire furnace operation is completely automatic, including atmosphere control and recording. Planned by Dayton and Lindberg engineers, the installation runs around the clock, six days a week, reducing costs and producing cleaner end products, brighter job finish, freedom from "decarb" and a consistently higher quality of work.

This is another example of how Lindberg equipment and Lindberg planning can help you find the most effective answer to any problem of applying heat to industry. We cover the field, heat treating, melting and holding, tempering, brazing, enameling furnaces, ceramic kilns, high frequency units, and are in the ideal position to recommend just the type of equipment most suitable for your needs. This can be factory built or field-installed in your own plant, fuel-fired or electric, whatever is best suited to your production processes. Consult your local Lindberg Field Representative (see the classified phone book) or get in touch with us direct. Lindberg Engineering Company, 2441 West Hubbard Street, Chicago 12, Illinois. Los Angeles Plant: 11937 S. Regentview Avenue, at Downey, California.

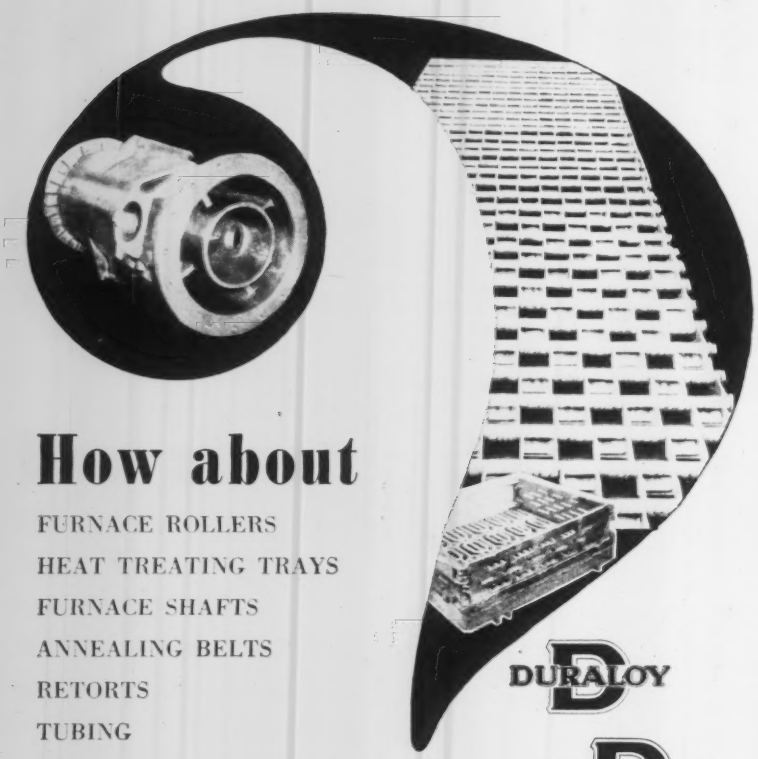


Lindberg Carbotrol unit automatically controls and records "dew point" and heating cycles of endothermic atmosphere.



Lindberg's "dimple" vertical radiant tubes give remarkably trouble-free service and function at all times at full efficiency.

heat for industry



How about

FURNACE ROLLERS
HEAT TREATING TRAYS
FURNACE SHAFTS
ANNEALING BELTS
RETORTS
TUBING

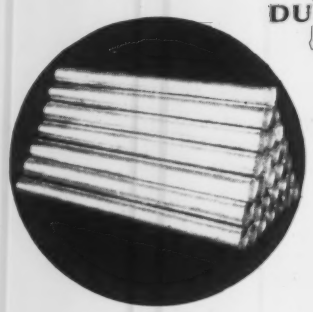
DURALOY

DURASPUN

Which are
Heat Resistant

Corrosion Resistant

Abrasion Resistant



When ready to order, how about checking with us here at DURALOY? For more than thirty years we have specialized in high-alloy castings. In fact, we were among the first to produce static castings and the first to produce centrifugal castings. We are old hands at producing castings alloyed to fit each specific requirement and to finish them to any extent desired.

Melt, castings and finishing are carefully controlled and quality tested by our staff of metallurgists, chemists, X-ray and gamma-ray technicians. If you would like more preliminary information, send for Bulletin No. 3150-G.

The DURALOY Company

OFFICE AND PLANT: Scottdale, Pa.

EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.
ATLANTA OFFICE: 76—4th Street, N.W.
CHICAGO OFFICE: 332 South Michigan Avenue
DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

(*Concluded from Page* 139)

dere St., Richmond, Va., where it will continue to specialize in chrome plating auto parts.

General Atomic Div., General Dynamics Corp., has moved to John Jay Hopkins Laboratory for Pure & Applied Science at 10955 John Jay Hopkins Dr. Its mailing address is unchanged: P. O. Box 608, San Diego 12, Calif.

Tubular Service Corp., Springdale, Pa., has consolidated its Kansas City, Mo., and Wichita, Kans., branches. New address: 2900 Genesee St., Kansas City, Mo. Donald A. Levenson is in charge of the new unit.

Binks Mfg. Co., Chicago, has moved its New York offices and plant to larger quarters at 35-42 41st St., Long Island City 1, N. Y. The company makes a complete line of spray painting equipment and industrial and commercial cooling towers.

Marine & Industrial Engine Div., Chrysler Corp., will move its entire operation to 12200 E. Jefferson Ave., Detroit, about Sept. 15. Production is expected to be in full swing in December.

NEW OFFICES

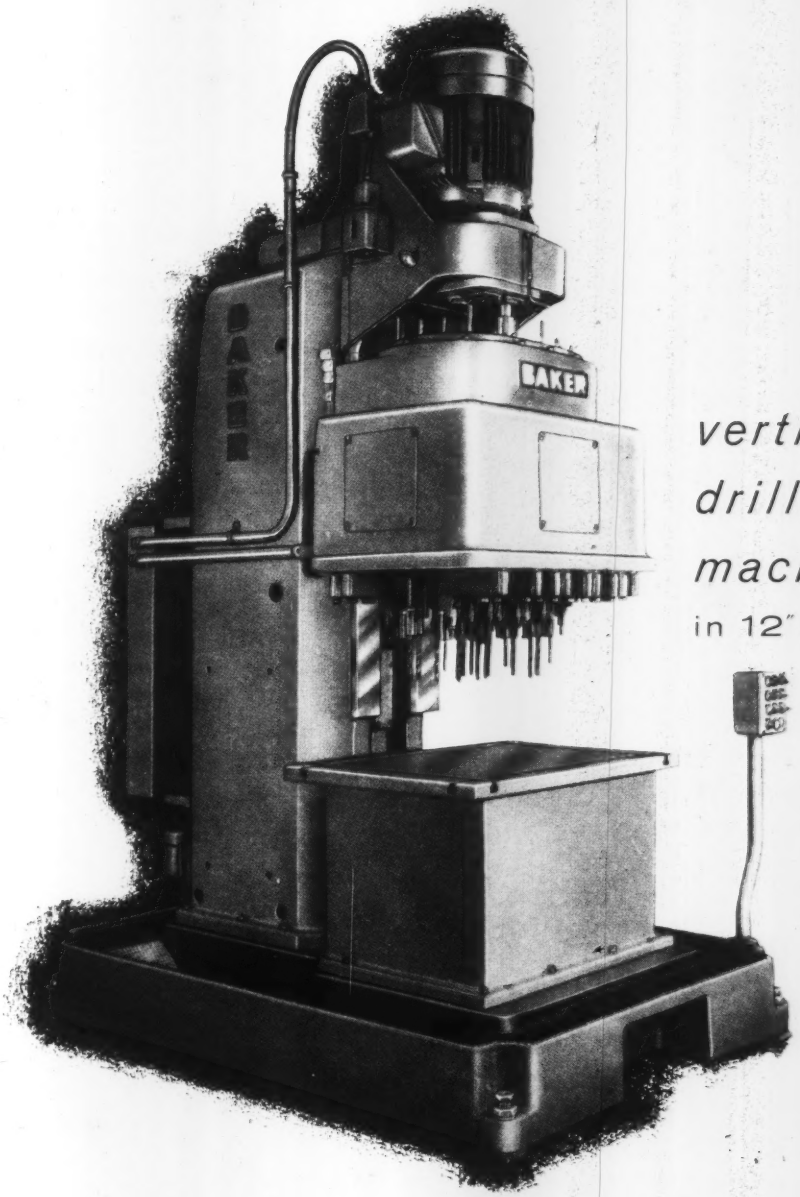
Kaiser Steel Corp., Oakland, Calif., has opened a sales office at Houston. The office (in the Esperson Bldg.) will be headed by Robert E. Brown. The Houston area was formerly served by Kaiser's Tulsa, Okla., office.

A. R. Heathcote & Co. Ltd., Sheffield, Eng., has established an importing and sales agency in the American Bldg., Richmond, Va. Eric M. Lipman, former vice president of sales for Cardwell Machine Co., has been appointed sole U. S. agent for Heathcote's line of machine knives.

Eutectic Welding Alloys Co. of Michigan Inc., Detroit, has opened a new warehouse and service center at 416 W. Eight Mile Rd., Detroit. It is the Michigan supplier for Eutectic's low temperature welding alloys.

new!

BAKER™



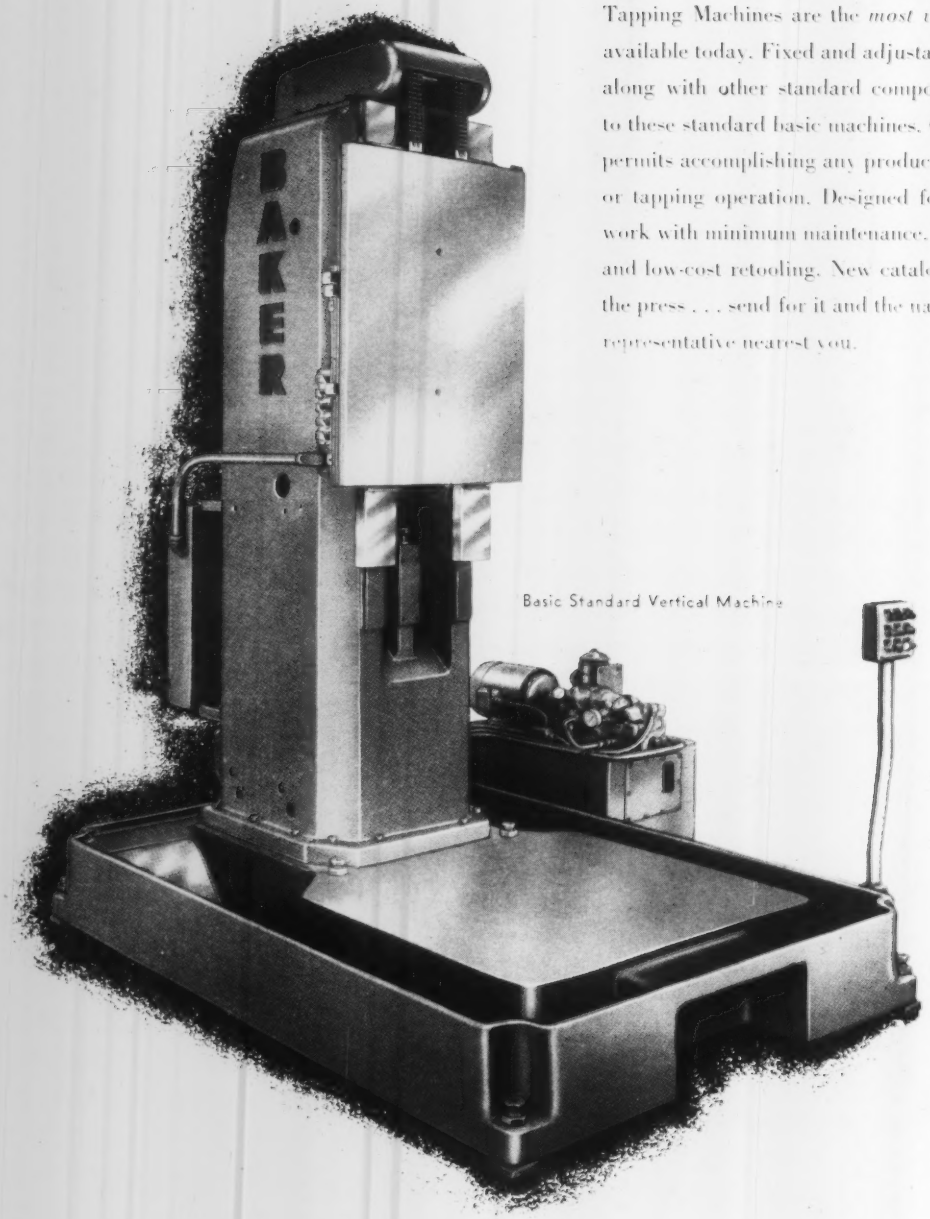
vertical hydraulic drilling and tapping machines

in 12″ - 18″ - 24″ way widths

BAKER BROTHERS, INC. TOLEDO 10, OHIO

BAKER

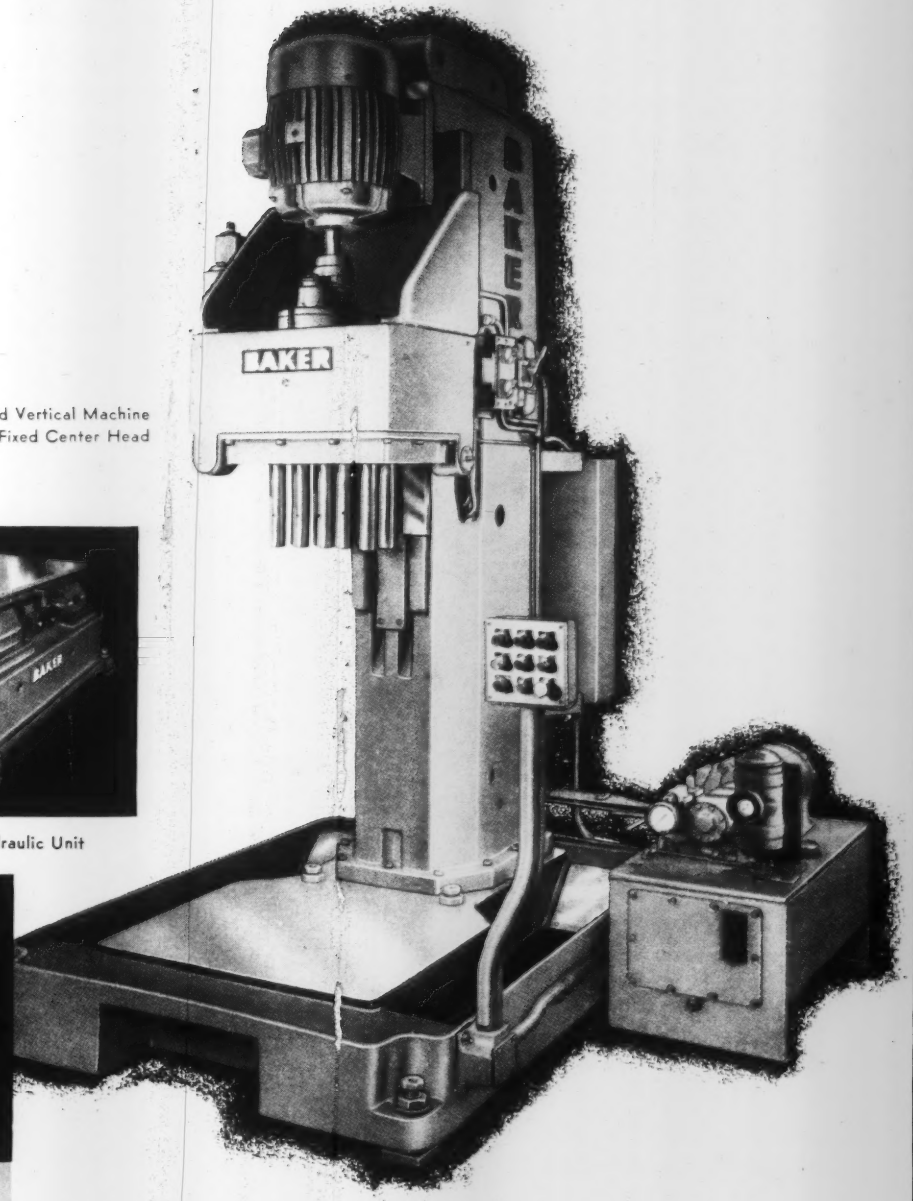
NEW Baker Vertical and Horizontal Drilling and Tapping Machines are the *most versatile* machines available today. Fixed and adjustable heads, along with other standard components, can be added to these standard basic machines. Complete flexibility permits accomplishing any production drilling or tapping operation. Designed for years of precision work with minimum maintenance, reduced stocking and low-cost retooling. New catalog just off the press . . . send for it and the name of BAKER representative nearest you.



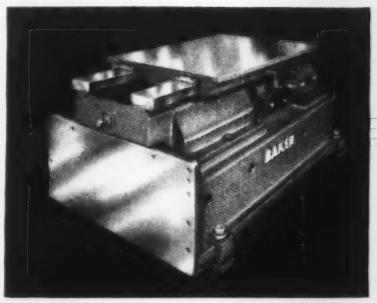
Basic Standard Vertical Machine

BAKER BROTHERS, INC. TOLEDO 10, OHIO

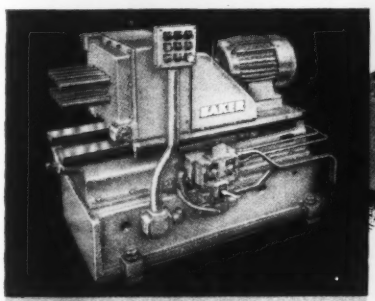
BA ER



Basic Standard Vertical Machine
With Fixed Center Head

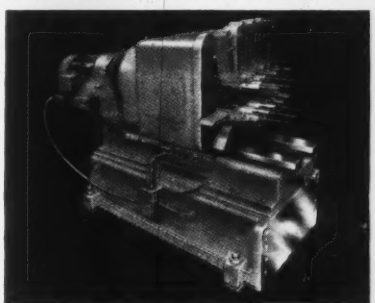


Basic Horizontal Hydraulic Unit



Basic Horizontal Feed Machine
With Standard Fixed Head

NEW HORIZONTAL HYDRAULIC FEED UNITS, TOO!



Basic Horizontal Feed Machine
With Standard Adjustable Head

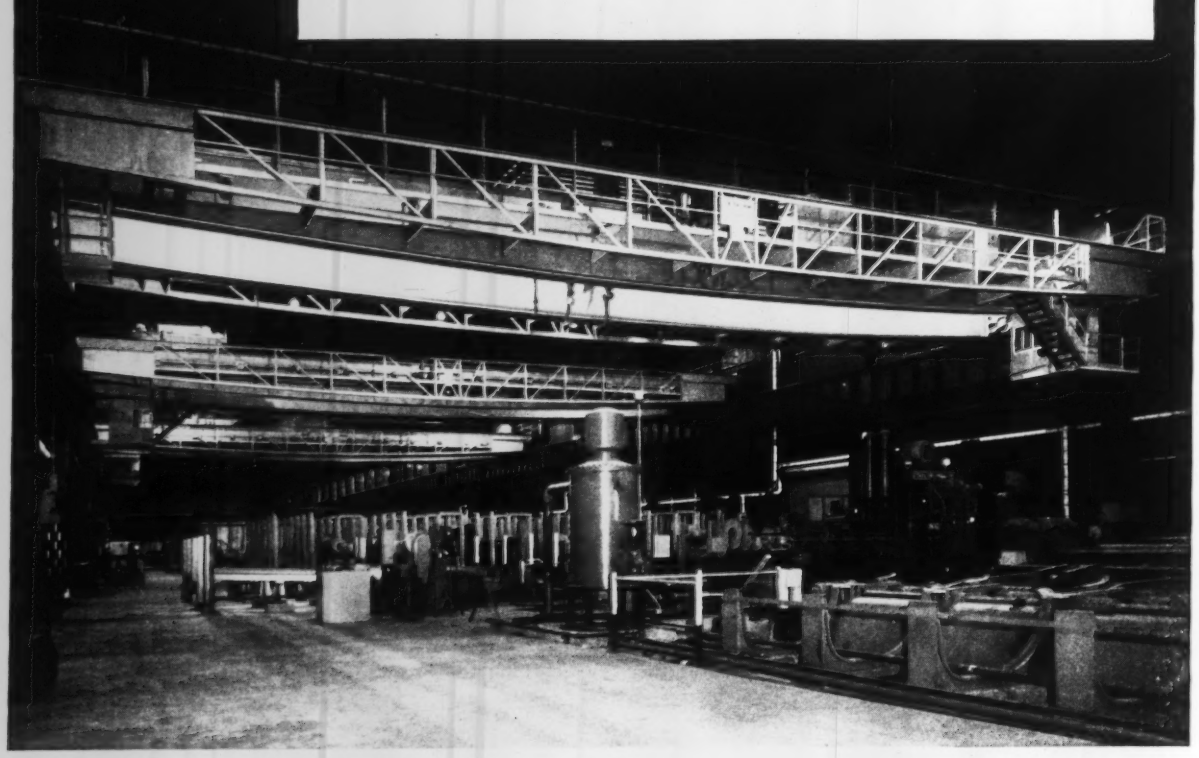
BAKER BROS., INC.
TOLEDO 10, OHIO

AMERICA'S LARGEST STEEL MILLS USE BROWNING CRANES

Built to A. I. S. E.
Specifications or Your Own

For years, Victor R. Browning & Co. has devoted major time and study to the building of heavy duty mill cranes. The finest materials and workmanship go into the construction of these cranes. All shafts are of the highest quality alloy steel. All bearings are calculated with a proper life factor as required by the A. I. S. E. We will design to suit your special requirements or build to your specifications . . . Victor R. Browning & Co. also makes a complete line of trolleys which can be adapted to existing bridges.

VICTOR R. BROWNING & COMPANY, INC.
WILLOUGHBY (CLEVELAND), OHIO



STEEL

250 million tons

Iron & Steel Show Section

- Salute to Iron and Steel Engineers . . 148
- The Steel Industry: A Giant Today, Bigger Tomorrow . . 149
- A Look at Raw Materials 152
- The Changing Look in Steel Plants . . 156
- The Change in Steel Mill Products . . 172
- AISE Convention Program 180

Today's Joe Magarac wears tailored clothes . . . . . .

JOE MAGARAC was the Paul Bunyan of the steel industry in the 1870s. Seven feet tall, with wrists a foot thick, and shoulders so wide he had to enter a mill gate sidewise, Joe performed fantastic feats of physical strength and skill. He could test the temperature of molten iron with his bare hands, twist a 1700-lb bar into a figure eight with three fingers.

Today's Joe Magarac has been to college. He wears tailored clothes. He has moved from the puddling furnace to the office. He is the iron and steel engineer. His feats are those of brain, not brawn.

Like his legendary predecessor, his influence is felt everywhere in the industry. For example, he has helped to reduce the industry's break-even point from about 70 per cent of capacity to less than 50 per cent. The importance of this breakthrough can scarcely be overemphasized. It is the means by which we can guarantee an adequate steel capacity for the future and by which we can research our way to the special steels needed for a galloping technology.

High among the factors contributing to this significant development is the industry's courage in maintaining a realistic price structure in the face of attacks by government agencies, labor unions, and some consumers. Technological improvements within the last decade have also contributed mightily. Among them:

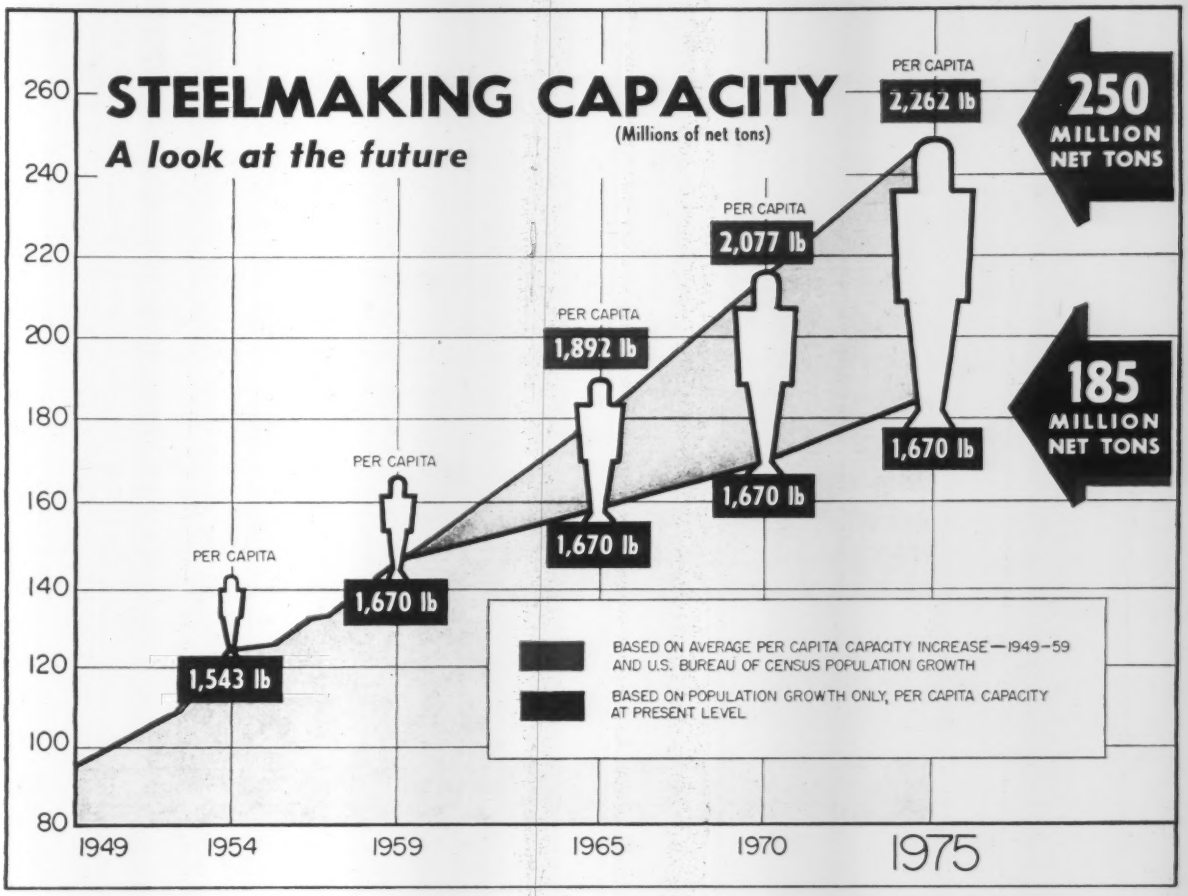
- Raw material preparation has been improved. Coal is washed and graded; limestone is sized; iron ore is beneficiated. The industry is working on self-fluxing sinter, a move designed to lower production costs more.
- Large operating units turn out more tons per hour at lower cost per ton.
- Equipment has been mechanized and automated. Example: Scarfing, once a hand operation, is mechanized.
- New techniques to increase efficiency have been introduced steadily. Oxygen in the open hearth and the new oxygen converters help to lower costs.
- Better operating materials reduce costs, permit longer runs. Refractory materials are an outstanding example.
- Facilities have been rearranged to provide optimum efficiency.

Cost control studies have shown the way to those and other means of sharpening efficiency, enabling the industry to hold prices within reason and still make a fair profit at less than capacity operations.

The modern Joe Magarac not only has helped lower the break-even point, but he also has provided the country with better steel products. He has developed steels with improved corrosion, fatigue, and high temperature resistance. He has provided supercoatings that adhere during fabrication and prolong product life. He has made possible higher and more uniform quality. He has provided special steels for sophisticated applications with minimum use of scarce and strategic elements.

Tomorrow's demands will be even more exacting. As we move deeper into an atomic and space technology, we will require materials to operate continuously in the 2500 to 5000° F range. We will need whole families of more exotic steels. And we will need twice as much as we use now.

The modern Joe Magarac dare not relax in his quest for better steels and lower costs.



A Giant Today, Bigger Tomorrow . . .

The Steel Industry

HOW MUCH steel capacity will be needed in 1975?

If steelmakers are to keep up with the projected growth in population and the anticipated rise in per capita capacity, close to 250 million tons will be needed. (See graph above.) That's 109,257,000 tons more than they had on Jan. 1, 1958.

If population were the only variable in the forecast, the industry would need about 185 million tons of capacity in 1975. But Roger M. Blough, chairman of U. S. Steel Corp., has stated that he expects the per capita use of steel to continue growing.

Best bet for 1975 capacity: Close to 200 million tons, based on a population of 221.5 million and a small growth in per capita capacity.

Steelmakers' Opinions — On the basis of a STEEL survey of 73 producers of ingot steel, it looks like the round of expansion being completed this year (the period: 1955 to Jan. 1, 1959) will account for close to 20.5 million tons of capacity. Respondents exercised more than usual caution in talking about the future because they have just been through a recession and also face the possibility of having about 37 million tons of excess capacity next year. (STEEL looks for production of about 110 million tons in 1959.)

Conservatism was obvious in most estimates of what will be needed in 1975 to meet normal demand for steel and have a comfortable margin for any emergencies. One executive vice president

6 Million Tons Finish 1955-58 Steel Expansion

(Scheduled increase in steelmaking capacity for Jan. 1, 1958-Jan. 1, 1959)

COMPANY	LOCATION OF PLANT	NET TONS	METHOD FOR INCREASE
Acme Steel Co.	Riverdale Station, Chicago	450,000	2 oxygen converters
Bethlehem Steel Corp. Bethlehem Steel Co.	N. A.	N. A.	Enlarging 3 electric furnaces
Bethlehem Pacific Coast Steel Co.	West Coast	230,000	2 electric furnaces at Seattle (176,000 tons); other improvements
Granite City Steel Co.	Granite City, Ill.	240,000	Improved operations
Inland Steel Co.	East Chicago, Ind.	500,000	Rebuilding 7 open hearths; improved operations
Kaiser Steel Corp.	Fontana, Calif.	1,397,000	3 oxygen converters
Lone Star Steel Co.	Lone Star, Tex.	140,000	1 open hearth
Lukens Steel Co.	Coatesville, Pa.	180,000	1 electric furnace
McLouth Steel Corp.	Trenton, Mich.	238,000	2 oxygen converters
Pittsburgh Steel Co.	Monessen, Pa.	144,000	Improved operations
Republic Steel Corp.	.....	500,000	Improved operations
Southern Electric Steel Co.	Birmingham	36,000	1 electric furnace
United States Steel Corp.*	Munhall, Pa. South Chicago, Ill.	300,000 1,300,000	Improved operations Improved operations
TOTAL INCREASE IN STEELMAKING CAPACITY		5,655,000	

N.A.=not available. *STEEL's estimate.

of a small company feels 160 million tons should be sufficient. At the other extreme, another small producer thinks today's capacity should be doubled (about 280 million tons). But most estimates center on 180 million to 190 million tons.

When Do We Start?—U. S. Steel Corp. officials feel that the industry will have to add an average of 3 million tons a year, which would boost capacity to about 192 million tons by 1975. The tables above indicate that the new capacity scheduled for 1958-59 will more than meet that requirement. But it looks like the next three years will fall short of the 3-million-ton rate.

When asked how long they feel present capacity will be sufficient to meet foreseeable demand, two-thirds of the respondents answered: Three to five years. Assuming there will be some relatively minor expansion in the intervening years, some major programs should be getting underway about 1961 if steel shortages are to be avoided in the mid-'60s. If the industry waits for demand to catch up with supply, the next round will not be started until 1963 or 1964.

Keeping Mum—But don't get the impression that steel executives are standing pat. Many hint of big plans for the mid-'60s, but they haven't programmed them or arranged financing this far in advance. For instance, one producer declares he has a 2-million-ton expansion for "sometime in the 1960s, whenever demand justifies it." Only one, Armco Steel Corp., Middletown, Ohio, publicly mentions a major program beyond 1960 (see table, Page 151), and details are still subject to change on that.

While the rate of increase in steelmaking capacity appears to be leveling off temporarily, expansion of processing and finishing facilities is still going at a good clip. For example, U. S. Steel still has 11 projects to be completed in 1959-60. About a half dozen sintering plants are still under construction or in the planning stage. (None of the producers reports plans for more blast furnaces. Most steelmen feel that steelmaking and finishing facilities will be in the best balance in years when present programs are completed.

Financing Problems—One of the biggest deterrents to expansion is

More Steel Capacity Is in the Works

(Expansion programs to be completed after Jan. 1, 1959)

COMPANY	NET TONS	TYPE OF FACILITY	COMPLETION DATE
Acme Steel Co.	200,000	Oxygen converters	Indefinite
Alan Wood Steel Co.	100,000	Open hearth improvements	June, 1960
Armco Steel Corp.	900,000	Oxygen converters	1961-64
Babcock & Wilcox Co.	100,000	1 electric furnace	Third quarter, 1959
Barium Steel Corp.*	800,000	Oxygen converters	Indefinite
Calumet Steel Div., Borg-Warner Corp.	120,000	2 electric furnaces	Apr. 1, 1959
Ceco Steel Products Corp.	120,000	2 electric furnaces	Sept. 15, 1959
Connors Steel Div., H. K. Porter Company Inc.	25,000	Modification of present electric furnaces	Under study
Keystone Steel & Wire Co.	100,000	1 open hearth	Jan. 1, 1960
Latrobe Steel Co.	11,000	1 electric furnace	Feb. 1, 1960
Universal-Cyclops Steel Corp.	30,000	1 electric furnace	1959
PLANNED EXPANSION AFTER JAN. 1, 1959	2,306,000		

*When new capacity is installed, present steelmaking facilities will probably be put on standby

lack of money. Most producers would like to finance new equipment out of earnings, but they claim this is becoming increasingly difficult because of unrealistic depreciation policies, rising costs, and declining profits.

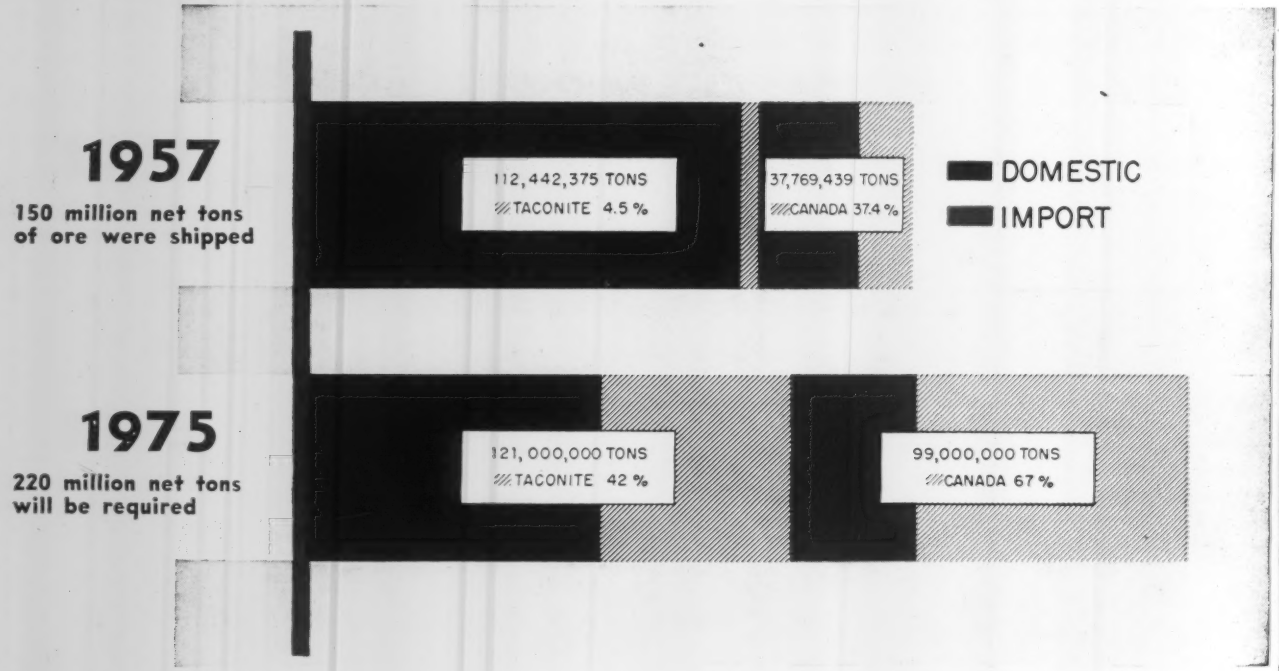
The debt of the industry is already high (STEEL's Financial Analysis for 1957 showed long term debt was $1.7 billion, up 7 per cent from the 1956 level). But many say they will continue to borrow even though it is expensive (U. S. Steel's $300-million loan is costing $12 million a year), or they'll increase equity financing.

Back to the Present—Some officials feel that a good part of the increased capacity anticipated for Jan. 1, 1959, has been in place for a year or more. Less than half of the reported increase in the accompanying table is the result of new facilities. One-fourth of the total comes from Kaiser Steel Corp. About one-third is accounted for by installation of oxygen converters. (One official feels that this process will account for 40 per cent of future expansion.)

1959 Capacity—The capacity of the industry to be reported by the American Iron & Steel Institute next Jan. 1 is likely to be close to 147 million tons. That would be an increase of about 6.3 million tons over this year's figure. The difference between that and the 5,655,000-ton figure compiled by STEEL can be accounted for this way: 1. The figures from three major producers are not available at this time. For instance, it is known that Bethlehem Steel Co. is enlarging three electric furnaces, but details have not been made public. 2. Further revisions of previously reported capacities are expected as the industry puts more of its new equipment to the test in the fourth quarter.

Blast furnace capacity is also up. Steelmakers are finding out what the furnaces installed in the last few years can really do. One company says that when it started new furnaces a year or so ago, they were rated at perhaps 1400 tons a day. Now with improved practices, it's getting as much as 2000 tons a day from some of them. "Sweetening" the melt with processed ores and increasing the use of oxygen in the furnace are mentioned most in this connection.

Sources of Iron Ore



New sources must be developed to feed the rapidly growing steel industry . . .

A Look at Raw Materials

HOW MUCH iron ore will be needed to maintain the steel industry from now until 1975?

It'll take twice the amount used in the last two decades, meaning that requirements will be in the neighborhood of 3 billion gross tons.

By 1975 steel capacity is expected to be around 200 million tons (see Page 149). Annual requirements will be: At least 220 million tons of ore, 160 million of coal, 110 million of scrap, 60 million of limestone, and huge quantities of air, oxygen, and water.

Ore Outlook—General trends indicate two significant changes: 1. The U. S. will have to increase imports. 2. Lower grade ore in domestic mines must be upgraded before it is shipped to the producers.

Coal Outlook—High grade sources are diminishing. But known reserves will be ample for at least 700 years. Improved techniques are needed to get the most from these sources.

Scrap Outlook—Expanding production calls for larger supplies. The major problems stem from the use of alloying elements which contaminate scrap for basic steelmaking.

Limestone Outlook—Little trouble is anticipated. Calcium, its essential ingredient, is one of the most plentiful elements in the earth's crust.

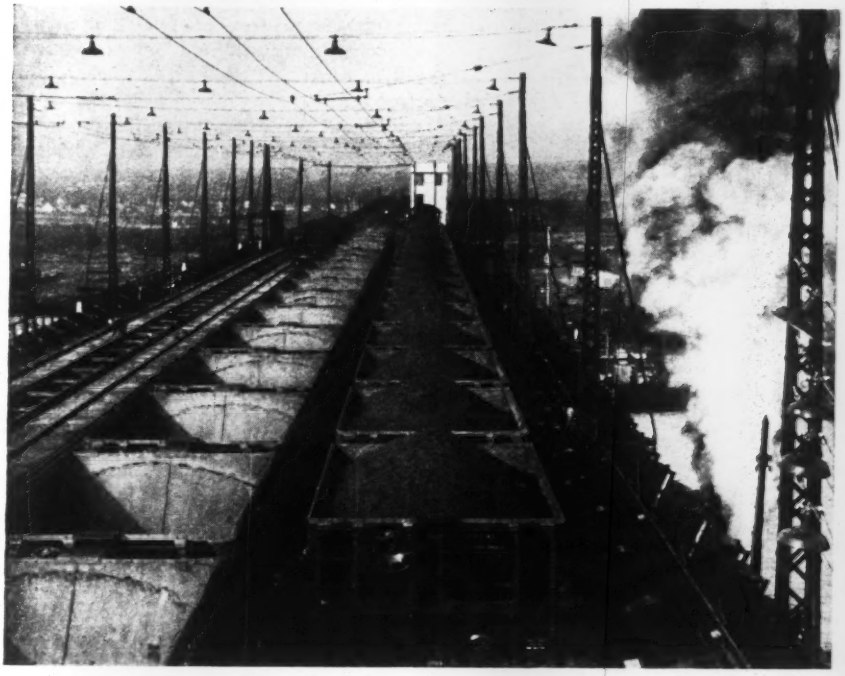
Oxygen Outlook—New processes are creating an unprecedented demand for this gas. Uses will multiply, creating the need for new, bigger, and better generating plants.

Ferroalloy Outlook—Many of the world's best deposits of chromium, manganese, molybdenum, titanium, tungsten, vanadium, and the minor metals are in foreign countries. American plants must meet the challenge of developing sources that are in politically friendly areas.

Iron Ore

The Past—Blast furnace practice has evolved around the use of ore containing at least 50 per cent iron. But the Mesabi Range, once thought to be practically inexhaustible, is running out of the high grade ore. Mills are turning to beneficiated ores to meet their needs.

The change is bringing benefits.



When a premium grade ore is used, output can be increased 20 per cent: Five blast furnaces produce the same tonnage as six and at the same operating cost.

A huge expenditure (blast furnaces cost at least $25 million, vs. $7.5 million 30 years ago) is saved by using the higher grade ores to increase production. Elimination of the added furnace also saves labor costs ($3.11 per hour, plus social security, insurance, pensions, and supplemental unemployment benefits).

What Is Beneficiation?—A large portion of the iron ore left is mixed with rock, dirt, and other impurities. Taconite, for example, is one of the hardest rocks known. This iron-bearing material contains up to 25 per cent iron intimately mixed with silica and other impurities. Beneficiation concentrates the iron to 63 per cent of the mixture.

Beneficiation methods have been refined in the last few years. The future promises further improvements and new processes. But many problems beg for answers. Example: Finding the best form for the concentrated ore—pellets, nodules, clusters, or some other type of agglomerate?

Upgrading is expensive. When the Erie Mining Co. reaches an annual capacity of 10 million tons, its plant will be valued at nearly $350 million ($35 per annual ton).

Foreign Sources—The high cost of developing low grade ores has increased interest in foreign sources. The U. S. was self-sufficient until World War II. Today, Canada is the focal point of ore development activities. Other sources are being developed in Venezuela (U. S. Steel), Liberia (Republic), and Peru (Utah Construction).

A host of problems attend the opening of foreign mines: Transportation, quality of the ore, capital investment, and the economic climate of the country. World unrest and unsteady political structures in some of the South American countries make U. S. companies cautious about becoming dependent upon foreign supplies.

Foreign Supply—Despite disadvantages, a growing percentage of our ore will be of foreign origin. Trends indicate that 20 years from now, up to 45 per cent of our ores will be supplied from foreign sources, with three-quarters of the imports coming from Canada.

The St. Lawrence Seaway has the potential to handle 45 million cargo tons annually. (The Welland Canal is now accommodating about 19 million tons a year.) At least 10 million tons of Labrador ore are expected to be moved westward to the lakes each year via this route. Other ore will be transported by rail.

While the Mesabi ore will be the predominant single source, the general trend is clear: In 1951, two-thirds of the shipments came from the standard ores of Minnesota, but by 1980, two-thirds will be a combination of taconite, jaspers, and foreign ores.

Coal and Coke

Increasing steel production implies greater consumption of coal and coke. Rule of thumb: "A ton of coal is required for every ton of steel."

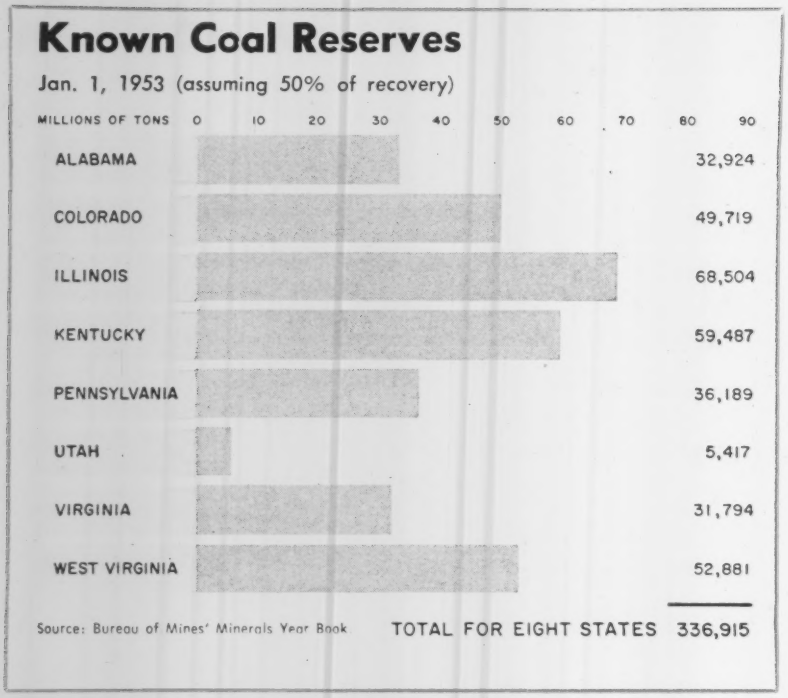
If the trend continues downward to say 0.8 ton of coal per ton of steel, capacity production of 200 million tons of ingots in 1975 will require 160 million tons of coal—35 million tons more than now.

Known coal reserves are ample, but mines must be developed to meet the needs. Present consumption in the U. S. is over 500 million tons annually.

Coke for Steel—Coal is used primarily in the form of coke. It is the source of heat and a reducing atmosphere (carbon monoxide). Blast furnaces use over 90 per cent of this nation's coke production (nearly one-fifth of our coal consumption).

Coal has many uses in metal production. The Reserve Mining Co. and the Erie Mining Co. will consume 300,000 tons of bituminous coal each year for their taconite plants. A considerable quantity of anthracite will be used in the pelletizing process.

The iron and steel industry also buys coal for the production of heat and power and for carbonization processes. Heat and power alone


Known Coal Reserves
Jan. 1, 1953 (assuming 50% of recovery)
MILLIONS OF TONS 0 10 20 30 40 50 60 70 80 90
ALABAMA 32,924
COLORADO 49,719
ILLINOIS 68,504
KENTUCKY 59,487
PENNSYLVANIA 36,189
UTAH 5,417
VIRGINIA 31,794
WEST VIRGINIA 52,881
Source: Bureau of Mines' Minerals Year Book
TOTAL FOR EIGHT STATES 336,915

1975 will require 160 million tons of coal

take over 6 million tons annually. (The President's Materials Policy Commission estimates that by 1975 13 million tons will be needed for this purpose.)

Problems—Quality is on the decline. The future will see more classifying and mechanical cleaning. So far, wet cleaning methods have proved to be the most efficient even though the coal must be dried after it is cleaned. Pneumatic cleaning is a dry process and may be developed more.

Transportation is another area of development. A coal pipeline has been installed by the Cleveland Electric Illuminating Co., Cleveland. Steel mills may follow that lead.

Scrap

In 1957, scrap consumption totaled 65 million tons—29 million came from within the industry, the rest from dealers.

The major problem is contamination. Alloying elements in special purpose metals are hard to identify and separate. Steelmakers demand material of known composition so they can control the heat, but the upgrading of metals will require even greater additions of alloying elements to closer specifications.

In the next few years, the scrap industry will develop better identification methods; co-operation between the mills and scrap dealers will become closer. For example, one scrapyard cuts the entire instrument board from automobiles. Bundles of this product are used in making copper bearing heats at one mill.

Better Equipment — Methods of preparation for mill consumption are improving every day with the application of bigger and better shears, presses, crushers, and other processing equipment.

An example of improved equipment is the Model 3000 Harris baling press made by Harris Foundry & Machine Co., Cordele, Ga. It is capable of reducing three automobiles to a 60 x 60 x 24 in. bundle in 90 seconds. It will compress over 350 tons of scrap in an 8-hour shift. Normally, it compacts only one car since charging doors cannot accept larger packages.

An indication of things to come is the "Prolerizing" method of upgrading (Proler Steel Corp., Houston, recently put it into production). Scrap is chopped up, passed through several processes (including heat treating), and emerges ready for melting. Rubbish has been sorted out.

Edwin C. Barringer, executive vice president of the Institute of Scrap Iron & Steel Inc., Washington, points to other research and predicts that a low cost incinerator will be developed to remove many impurities (including undercoating which has an oil base and imparts sulfur to steel).

Such improvements will keep the quality and quantity of scrap up to demand in the next 20 years unless there is a period of extraordinary expansion.

Oxygen

Growth in the use of oxygen has qualified it as a basic raw material. In 1956, steel consumed 24 billion cu ft, nearly half of U. S. output.

Two of the first special uses came in 1946: Oxygen was introduced into open hearth furnaces for accelerated combustion through the burner, and it was lanced into the bath of the furnace for decarburization of the open hearth heat. Both practices are widespread today.

Many Uses—It's estimated that these quantities (per ingot ton) are used in the more accepted practices: Open hearth lancing, 150 to 300 cu ft; bessemer converter, 400 to 500 cu ft; top-blown oxygen converters, 1800 to 2200 cu ft; hot scarfers, 100 to 150 cu ft; and blast furnaces, 1200 to 4500 cu ft (at 1 to 4 per cent enrichment).

Most of those applications have gained acceptance in the last 10 to 12 years. A steady uptrend is expected. Growth hinges on the availability of low cost oxygen and the advancement of application technology. Costs have been reduced in recent years by improvements in process equipment and by increasing plant size.

New Plants—Look for more large oxygen generating plants like the one being built by Linde Co., division of Union Carbide Corp., New York. It will serve four U. S. Steel plants on the Monongahela River, south of Pittsburgh. Production (1000 tons per day) will be piped to the plants.

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It is with pleasure that we of Peterson Steels announce the formation of the Strip Steel Division, with headquarters at Melrose Park, Illinois.

The new division will promote the sale of razor blade steel, hardened and tempered spring steel, and other cold rolled high carbon steels now being rolled at the Hellefors Works, Sweden, and at the Eberle Works, in Augsburg, Germany.

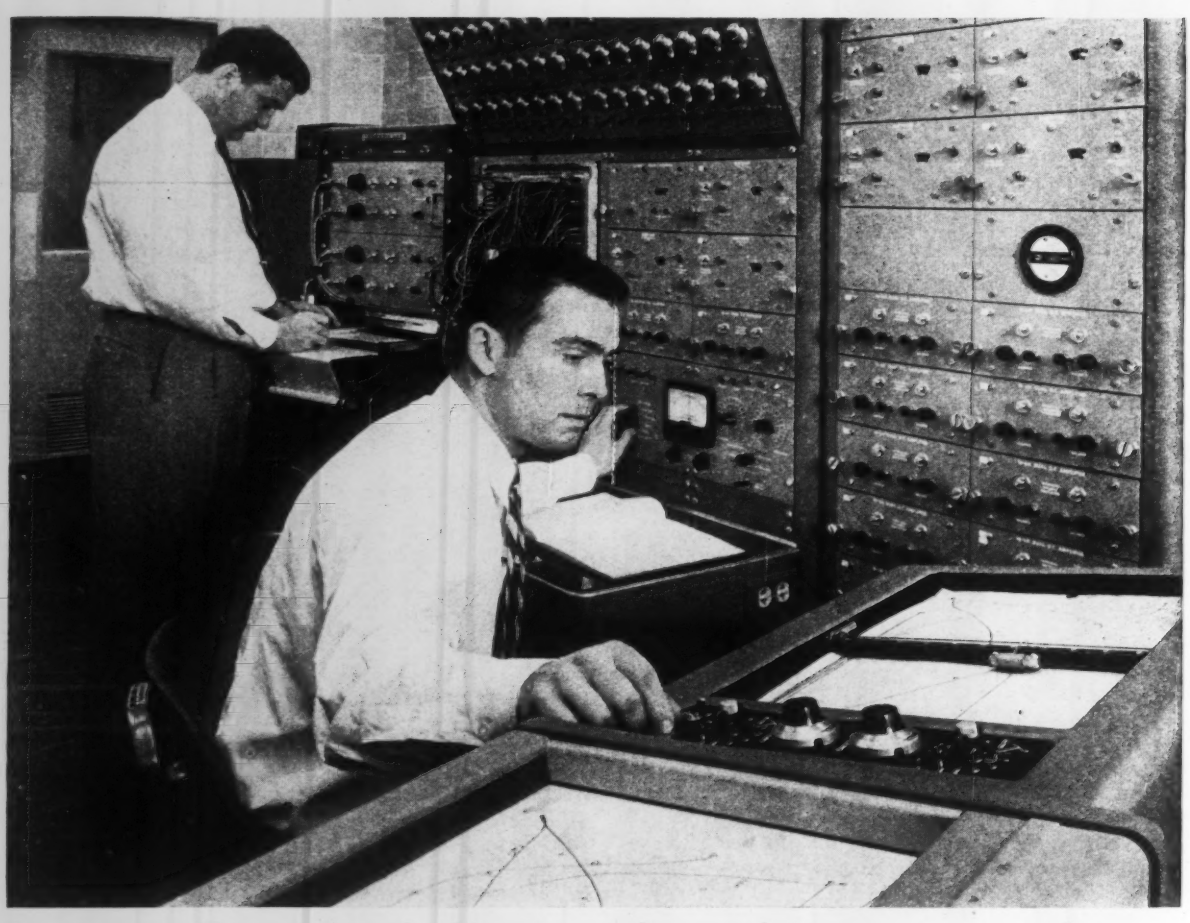
Cordially,

PETERSON STEELS, INC.

R. G. Willaman

R. G. Willaman

President



Computers will move from bookkeeping and research into process control . . .

The Changing Look of Steel Plants

WILL the steel plant of 1978 bear much of a family resemblance to its 1958 counterpart?

The answer is "Yes," but it must be qualified: The relationship will probably be that of cousins. Many family characteristics will be perpetuated. Differences will be largely a matter of degree. Some will be apparent, such as size and ways of doing things. Others will be subtle, involving the new generation of men who will be operating the nation's steel plants in 1978.

The evolution is expected to follow these lines:

SIZE — Companies, plants, and equipment will be bigger than they are today.

STEELMAKING PROCESSES—Processes like the oxygen converter and electric furnace will start to challenge dominance of the blast furnace and open hearth.

AUTOMATION—Production of volume, garden variety products will be highly automated. Advances in other areas will still be hampered because of the number of variables involved.

CONTROLS—Computers will be making big inroads in process control.

OUTPUT—Equipment (such as the oxygen converter) will be turning out more tons per hour per unit.

MANPOWER — Needs will be somewhat different from today's. For example, electronic specialists will be in great demand.

POWER—Atomic sources will be approaching feasibility as power re-

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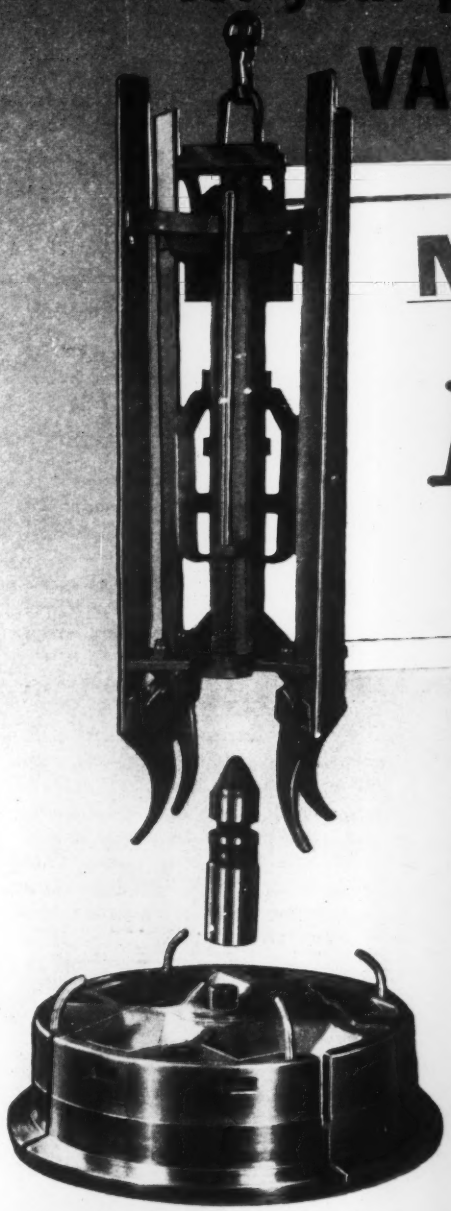

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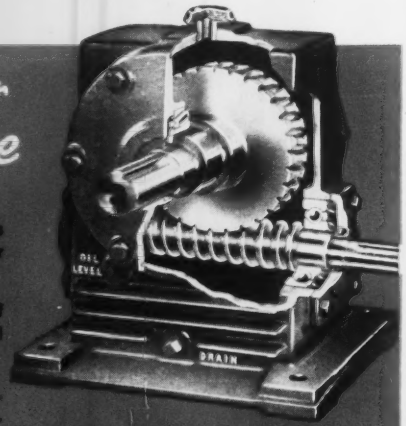

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quirements continue to spiral.

CONSERVATION—Much attention will be given to such things as heat energy recovery and the quantity and quality of water.

RESEARCH—Intraindustry projects and free exchange of information will probably be routine.

INNOVATION—Two possibilities stand out: 1. The most unusual developments are expected to be made in special mills. Reasons: Their low volume, variety of products, and wider profit margins. 2. Steelmaking ideas generated in this country may get their first trials abroad. Reasons: Cost advantages and/or conditions that demand an unusual approach.

Size

Companies, plants, and equipment will be made bigger to take advantage of the efficiency that stems from size. We've seen a great deal of that in mergers consummated and planned and in the steady growth of already enormous plants like U. S. Steel's Gary (Ind.) Works and Bethlehem's Sparrows Point (Md.) plant.

Equipment like Weirton Steel Co.'s 600-ton open hearth at Weirton, W. Va., and the 30-ft hearth blast furnace at Great Lakes Steel Corp., Ecorse, Mich., will probably bow to still larger furnaces because of evidence that it's cheaper to make iron and steel in big units than in small ones.

Problems—But expansion won't be easy. Money will be a problem. It cost $200 per annual ingot ton to increase ingot capacity in 1947, $300 in 1957. It probably won't take less than $400 in 1967.

A blast furnace, complete with coke ovens, sintering machines, and other auxiliaries, costs $45 million now, soaking pits and a blooming mill another $20 million. It will take some doing to get equipment like that to pay for itself before the next demand for expansion comes—in ten years or less. So we'll be facing another problem: Holding down the cost of increasing capacity.

Steelmaking Processes

Evidence argues against expansion by the blast furnace, open

(*Please turn to Page 162*)

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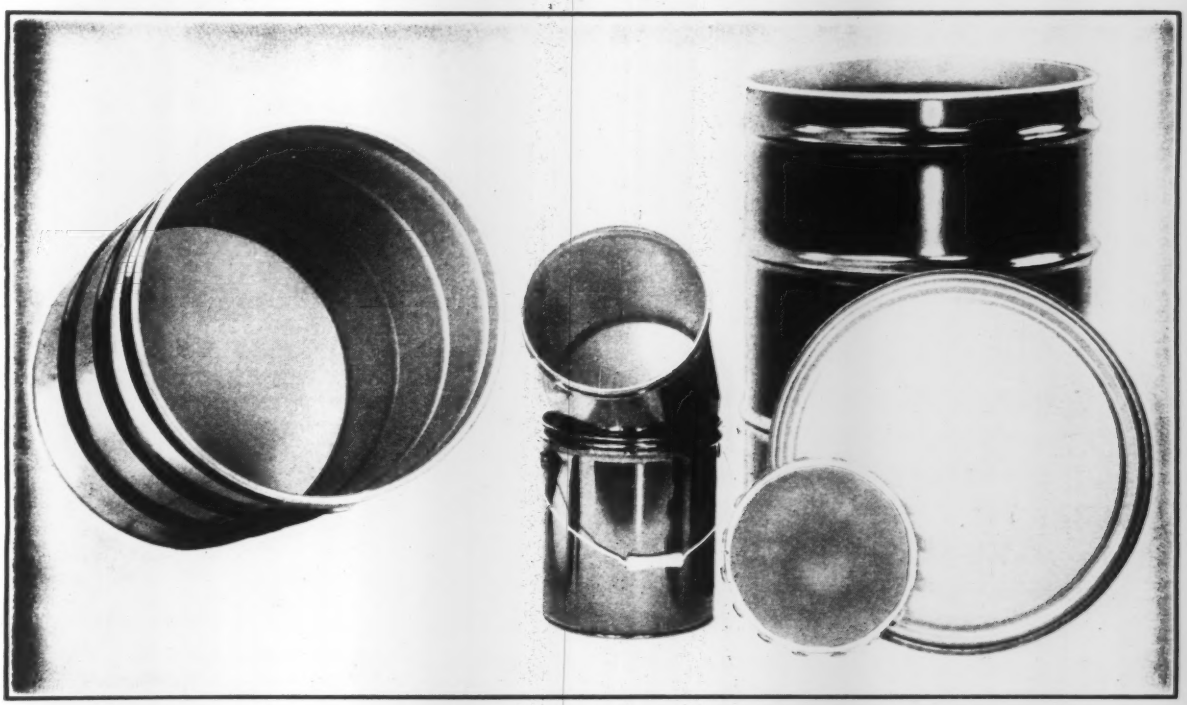

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HERESITE baked pure phenolic linings are approved by the U. S. Department of Agriculture for lard and other edible fats and oils.

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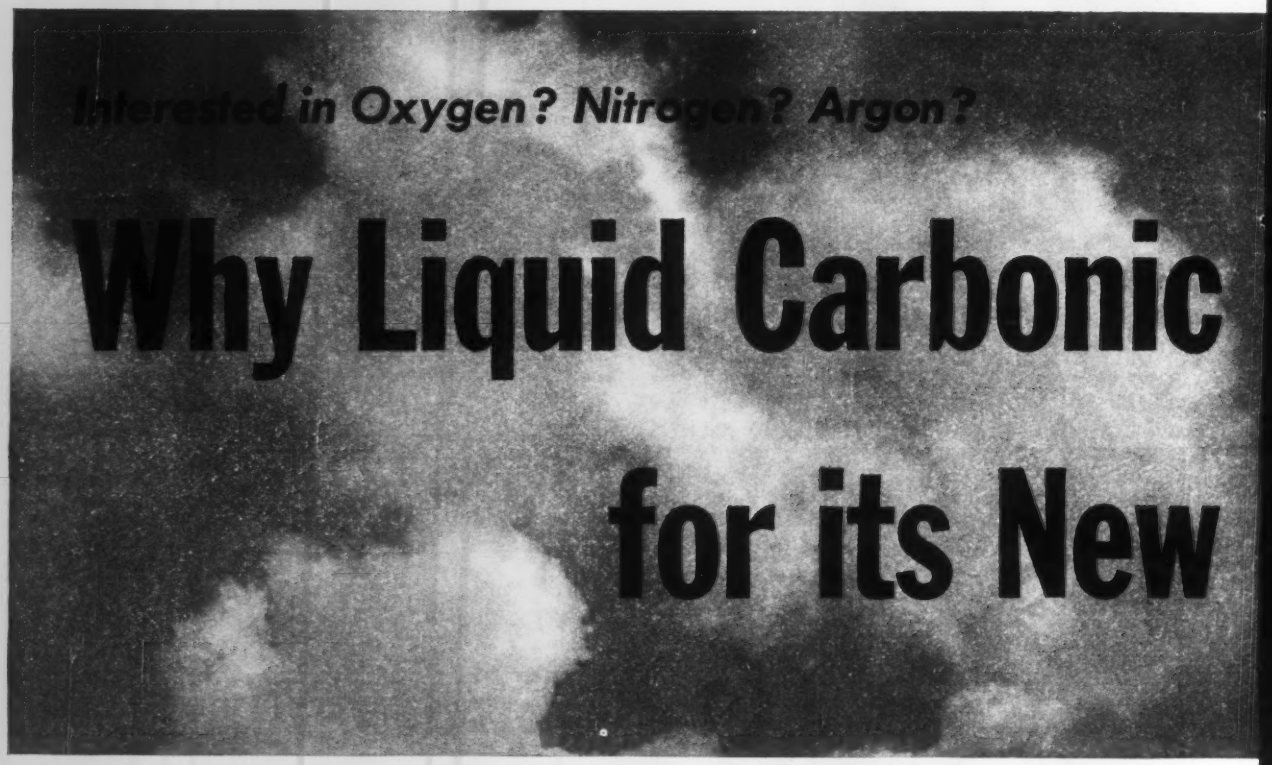

The Liquid Carbonic Division of General Dynamics doesn't take unnecessary chances. This prominent firm had confidence that they could rely on Messer to design and engineer a new air separation plant that would give more than just "satisfactory" results.

What Happened?

American Messer met the production schedule, and in February, this Liquid Carbonic plant at Urbana, Ohio went on stream. This tonnage plant is exceeding specifications—it can and does turn out liquid products at purities much higher than specified. The plant is also exceeding specifications in capacity and output.

Generous design margins and comprehensive automatic instrumentation give exceptional flexibility and completely stable operation at minimum operating cost.

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Messer-engineered plants have been operating with outstanding success in the U.S.A. since 1913 and for more than 50 years in many other countries. Where can you profitably use tonnage oxygen, nitrogen, or argon? If you decide to build your own plant, American Messer can assure you of best value for your investment dollar. Your inquiry will be welcomed.

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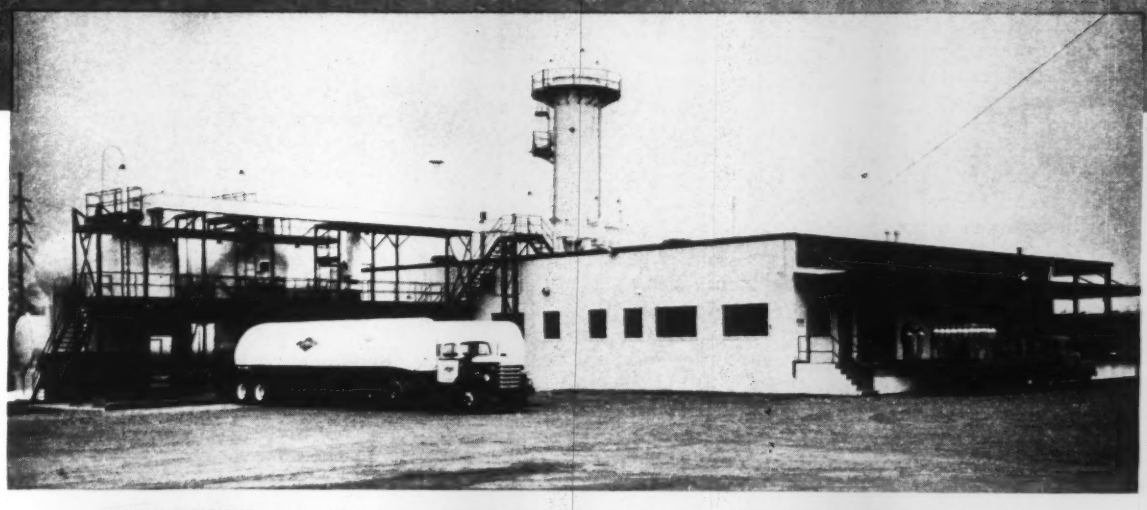
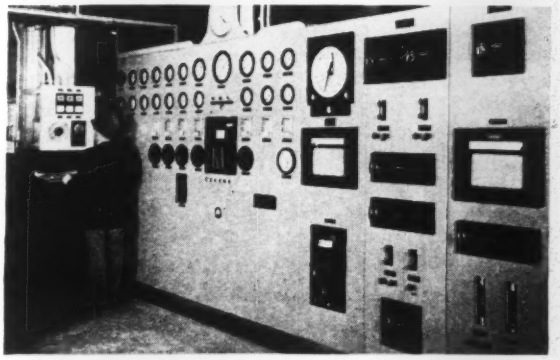
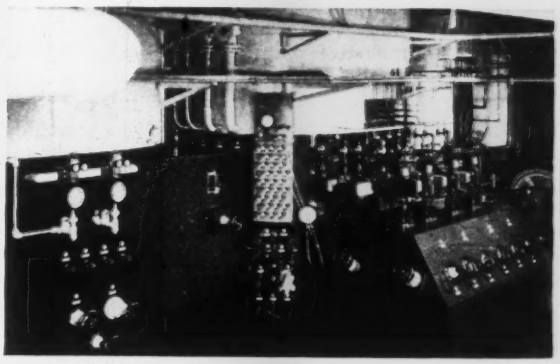
Chose MESSER Oxygen Plant



HIGHLY EFFICIENT... View of the Urbana, Ohio plant showing the Messer fractionating column extending above the building.



CONTROL PANEL indicating, recording, and controlling all important process variables shows the high degree of instrumentation typical of Messer plants.



CONVENIENCE—Careful piping design brings major valves to convenient, logical locations for ease of operation and maintenance. Test and sample connections are brought to a central control board.

hearth, ingot route—at least on the scale we have just been through. It costs too much.

The crystal ball shows a long term evolution away from the blast furnace and open hearth. That steelmaking team will probably reach its peak during the next ten years. (But another 50 years may not see the last of it.) The oxygen converter and the electric furnace will continue to pick up more carbon steel business. Direct reduction will become practical on a small scale and will grow slowly as competing methods fight for popularity, but it will be a long time before it seriously threatens any major blast furnace plant.

Continuous casting of carbon steel will probably remain dormant in the U. S. until the next expansion round. So will the wide planetary hot mill. But the next ten years will see steady progress in automating present equipment and in eliminating extra handling between processing stages. Both hot and cold extrusion will gradually take over more work from the bar mills for all grades of steel, particularly in special shapes. Batch processes will be under pressure to make them at least semicontinuous.

Automation

The trend toward automation will be accelerated wherever it can speed up processes and eliminate human error.

It has already progressed far in rolling mills and in continuous annealing and tinning lines; a fair beginning has been made in the operation of blast furnaces, sintering plants, and reheating furnaces. But automation in the steel plant will continue to be beset by so many variables that its progress, except in the manufacture of volume, garden variety steel products, may seem to proceed at a snail's pace.

The task of gathering and correlating data on all phases of steelmaking will continue to grow in importance. For, in spite of all the facts that have been gathered, steelmen still don't know nearly enough about the details of their processes, especially about how the variables affect each other. They aim to know more.

One of the tools in growing use for pinning down steelmaking variables is the electronic computer.

Controls

The coming field for computers in the steel industry is in process control. We are just seeing its beginning in the control of blooming-slabbing mills.

The roller sits in his pulpit, and as the ingot comes from the soaking pit, he inserts a punched card into a reader. The reader takes the information and directions coded on the card, plus information it may receive from detecting devices (such as the weight and temperature of the ingot) and translates it into actions of the rolling mill: So many passes, and so many turns, at so much reduction per pass. The ingot emerges as a slab or bloom on the proper side of the mill, with no more effort being expended by the roller than the punching of a button—and knowing the proper card to insert.

But to reach this happy state, the computer must be told exactly what to do under any given set of circumstances, either by directions built into its memory or by the punched card. It can draw conclusions—but only from data at its command, and then only according to built-in rules.

Places for Computers — There seems little doubt that various systems will find their way into many parts of the steel plants. They may soon be controlling these processes:

1. Coal blending for coking.
2. Coal chemical plant operation to obtain maximum yields of by-products with the greatest economic value.
3. Blast furnace operation, including charging, wind rate, cooling water flow, stove changing, and optimum tapping times.
4. Open hearth operation, including proportioning and charging of pig iron, scrap, and lime; furnace reversal; draft control; fuel control; and continuous analysis to determine alloying needs and best tapping time.
5. Soaking pit operation for optimum fuel use and ingot scheduling.
6. Rolling mill operation, including tandem mills.
7. Processing line operations, such

How to Sidestep Obsolescence

By upgrading plant equipment now, while demand is low, you can sidestep future obsolescence and be ready for tomorrow's production peaks. An important part of this program can be General Electric's new packaged, adjustable-speed drive—the Speed Variator.

Because of its wide speed range and precise regulation, it is ideal for modern, high-speed production. For example, in processing lines, rolling and tube mills, the Speed Variator maintains speeds automatically, accelerates and decelerates smoothly, controls tensions accurately.

New Amplistat Regulator and Static Exciter, standard on all new G-E Speed Variators, have no moving parts. As a result, maintenance costs are reduced.

To find out how the Speed Variator can help you obtain maximum drive flexibility, call your General Electric Sales Engineer, or write for GEA-6643. *Direct Current Motor & Generator Department, Erie, Pa.*
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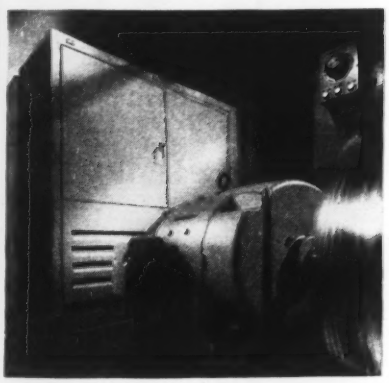

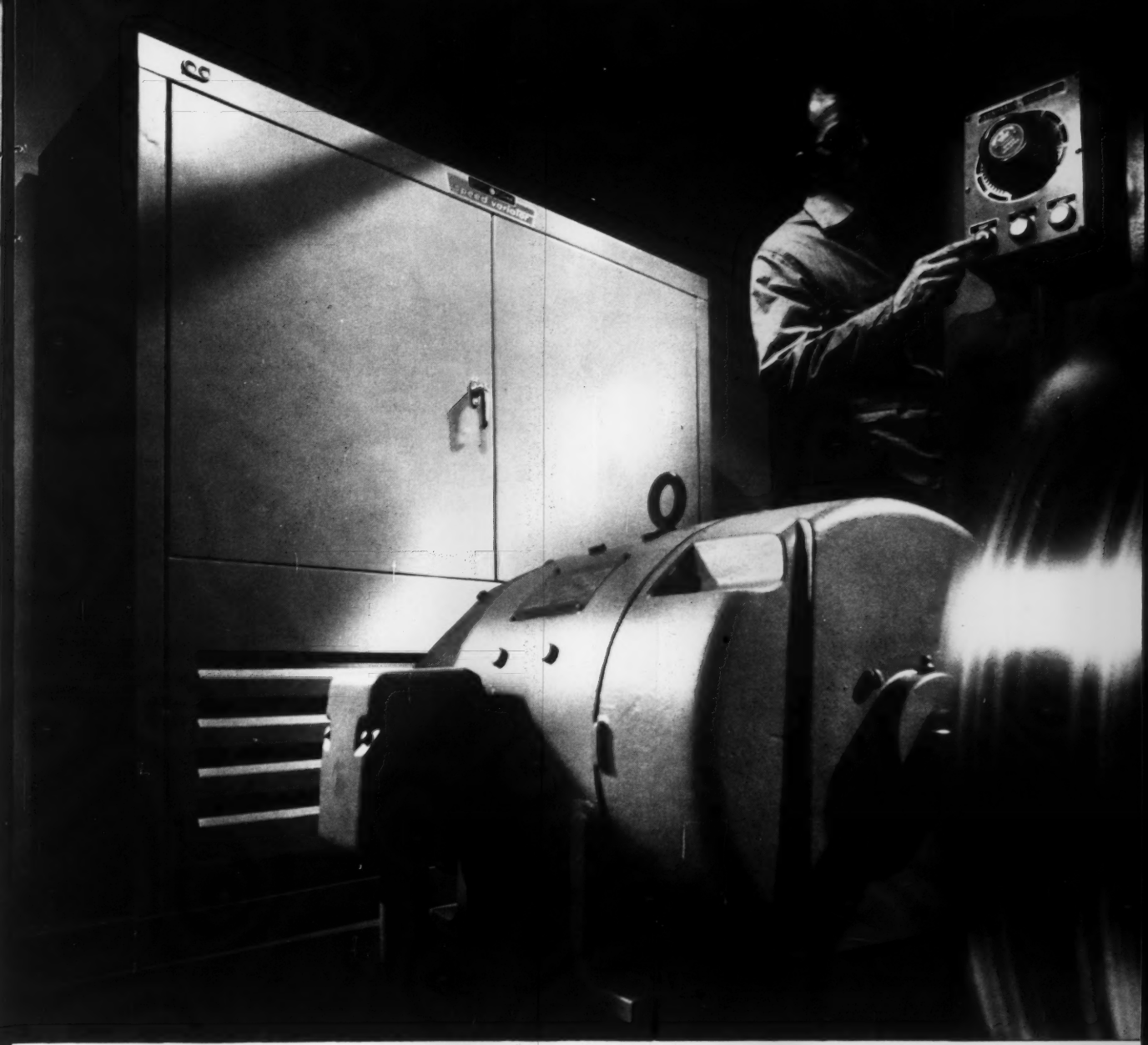

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New General Electric Speed Variator

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2. Static Exciter, with silicon rectifier, has no moving parts, requires no warm-up, provides more production time, less maintenance.

3. Two-Unit, Four-Bearing M-G Set features Tri-Clad† '55' motor for more dependable performance.

4. Front-Connected Controls, recessed wiring troughs make routine inspection easy, cut maintenance time.

5. Kinamatic* Drive Motors provide extra power to meet peak loads. For details on this powerful motor see next page.

For more information contact your Apparatus Sales Office or write for GEA-6643. *Direct Current Motor & Generator Department, Erie, Pennsylvania.*

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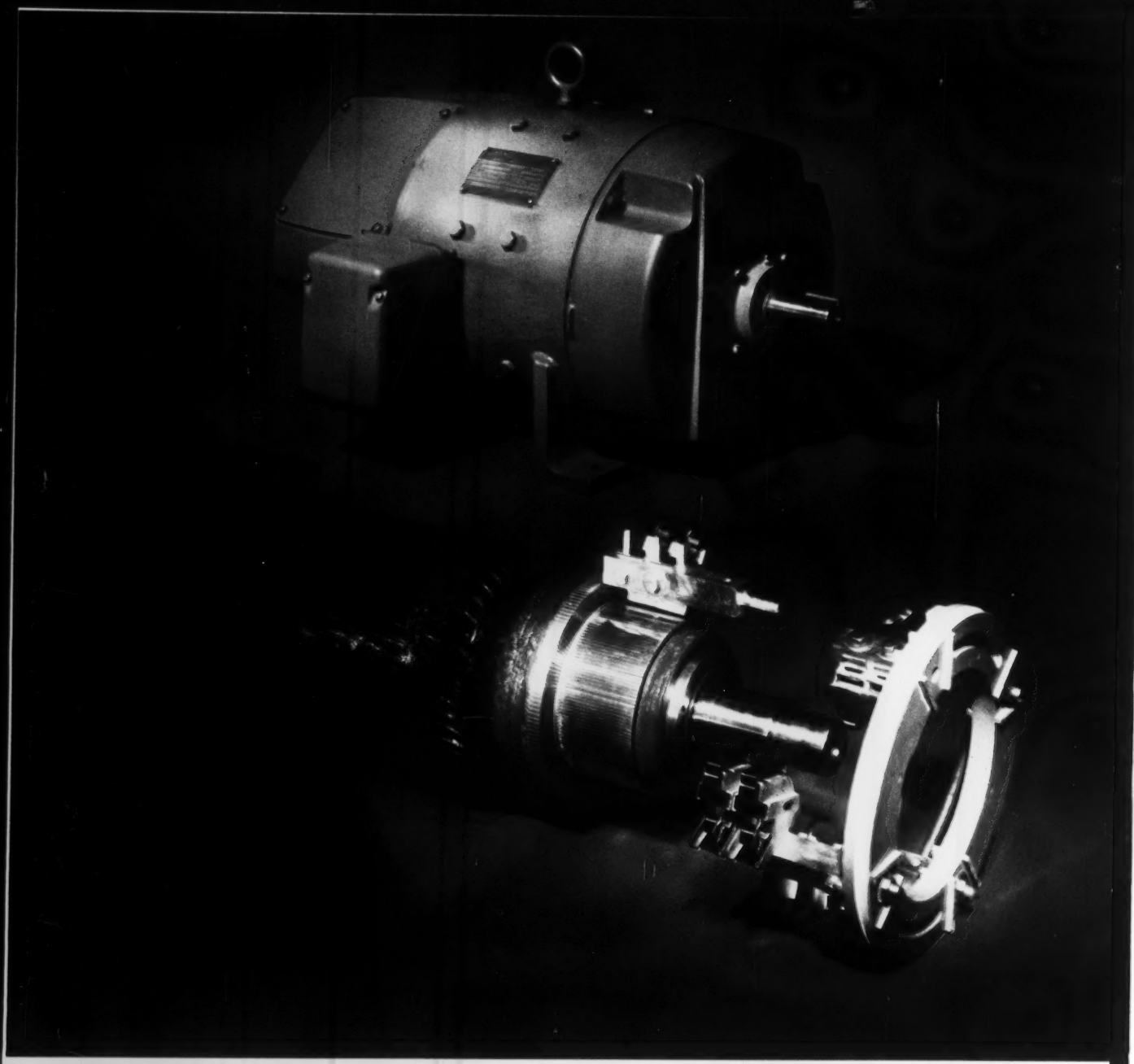
GENERAL ELECTRIC

More On Kinamatic Motors



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Proper Design Balance . . . means unmatched commutating ability . . . the ability to deliver the short bursts of power required for quick acceleration and deceleration. Fewer turns per armature coil . . . full complement of commutating poles . . . maximum number of commutator segments, combine to permit higher peak loads.

New Brush Assembly . . . constant-pressure brush springs eliminate brush adjustments. Bronze, corrosion-resistant brush holders are mounted on square steel studs for stable operation in both directions of rotation. Molded polyester-glass yoke resists impact, intense heat and corrosion.

D-c Kinamatic Motors offer a reliable key to successful automation. Additional information is available at your nearest General Electric Apparatus Sales Office. Or, if you prefer, write for Bulletin GEA-6355, *Direct Current Motor and Generator Department, Erie, Pennsylvania.*

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as continuous cleaning lines, annealing lines, and coating lines, including sorting of products into classes, and self-correction of the operation.

Output

The goal of more tons per hour per unit of equipment will also be pursued by greater speed of operation. Speed is one of the more attractive features of the oxygen converter (as it is of its predecessor, the bessemer converter). Present oxygen units, operating on 45-minute cycles, are quite capable of 100 tons per hour production if they can get the scrap and hot metal. The largest present vessels are rated at about 75 tons (and can tap 100 tons), but bigger ones will be built.

A chicken and egg relationship between high speed and precision exists. For instance, greatly increased speed of rolling mills has been accompanied by a boom in constant-velocity drives because fast mills can't tolerate the lack of precision in universal linkages. Precision associated with cold mills has been working back right through the rolling chain, and even primary hot mills are being built to machine tool accuracy.

Manpower

The days are numbered for jobs requiring manual skill or brawn.

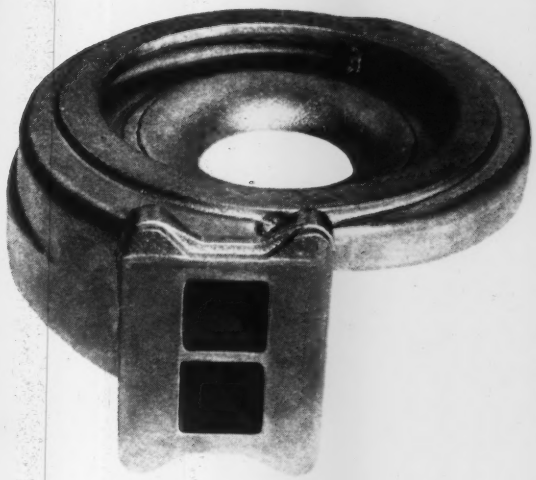
Electronic specialists will be at a premium. More statisticians and computer programmers will be needed. But skilled rollers and melters and first helpers will still be on the scene to take over when the control mechanisms fail.

Power

Every new control mechanism, material handling device, or item of production equipment seems to require more power to operate than the equipment it replaces. Some see a need for plantside atomic systems when the cost curves of fossil fuel power and atomic power cross in the years ahead.

Conservation

The vast amount of energy wasted around a steel mill in heat lost directly to the air, to cooling water,



THERMAL SHOCK

A CASE IN POINT—This 20 pound Ni-Resist casting made for the Schwitzer Corporation by Hamilton Foundry is the turbine casing of a diesel engine turbocharger. Exhaust gases which turn the impeller at speeds up to 90,000 rpm subject the housing to rapid cyclic temperature changes up to 1500° F. Any free scale formed at these temperatures could erode and eventually destroy the impeller blades. Ni-Resist was chosen for this part because it produces practically no free scale, it resists growth and oxidation at high temperatures, and it resists cracking under thermal shock.

Ni-Resist iron combines three particular product engineering and design advantages. It resists oxidation: as low as .002 inches per year oxide penetration at 1400° F. Scale formed adheres to the base metal and reduces further oxidation to a minimum. It has high temperature strength: up to 12,000 psi at 1500° F. And it's the toughest of all flake graphite irons: Charpy impact strengths (unnotched) up to 150 ft.-lbs. Hamilton Foundry casts all types of Ni-Resist including Ductile Ni-Resist.

When new and unusual design problems arise in the selection of metal and the casting of parts, you will find that the skill and integrity of your foundry is your best insurance that specifications—and delivery schedules—will be met.

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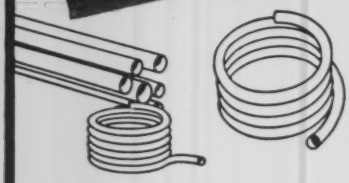

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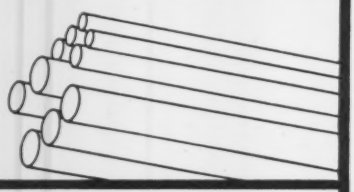
A full line of flexible and rigid plastic pipe and tubing in all commercial resins, in sizes from ⅛" to 4" OD. Fittings, cements and valves available from stock. Write for detailed literature.

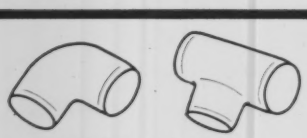
NON-SKID ALUMINUM TREAD PLATE

Providing amazing gripping power (either oily or dry) this lightweight, corrosion resistant Alcoa product has a tough abrasive (fused aluminum oxide) rolled right into an aluminum base plate for longer wear. Available in four thicknesses —0.125", 0.188", 0.250" and 0.375" Write for descriptive booklet.

SHAFTING

Top quality shafting made of Monel, Everdur or Tempalloy. Originally developed for boats and other marine use, these shafts have gained wide industrial use in pumps and other machinery operating in corrosive atmospheres. Literature available.





WELDING FITTINGS

Stainless Steel forged welding fittings are stocked in I.P.S. sizes from ½" to 12" for Schedule 5S, 10S, 40S and 80S Pipe. All conventional shapes are on hand. Welding fittings are also stocked in Aluminum, Monel, Nickel and Inconel. Literature available.

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A new item introduced at the 1958 Welding Show, Inco-Weld "A" Wire is a single product for inert gas welding of most combinations of dissimilar alloys. Technical Service and complete literature on request.

These "Plus Items" and many more are available in addition to a wide selection of corrosion-resistant sheet, rod and tube.

All told, there are more than 20,000 items distributed and serviced by Whitehead. All are available, off-the-shelf, from the nine Whitehead Metal "Supermarkets." All are the products of such leading producers as Alcoa, Anaconda, Inco & Crucible Steel to name just a few.

When you call Whitehead you get fast service, and frank, unbiased help in selection. Technical service when you need it. Add it up and you'll find it pays to

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and in repeated handling is one of the great frontiers to be attacked. Example: Sinter and coke are quenched by water sprays. Later, in the blast furnace, all the heat taken away from them has to be added in the blast. A good deal, but not nearly enough has been done with waste heat boilers and other kinds of heat exchangers. One of the characteristics of the years ahead will be the increasing attention paid to heat energy recovery as only one phase of the greater conservation picture.

Because water is so common, it is often overlooked as one of the most important raw materials of all. Greater efforts will be made to conserve water because mills won't be able to obtain the quantity and quality they need unless they do conserve it. Settling basins, filters, and cooling towers will become an even more important part of the steelmaking scene.

So will waste treatment plants to remove scale, phenol, oil, and other contaminants. Recovery won't necessarily make a profit any more than proposed pickle liquor recovery plants are expected to, but treatment will be accepted as one of the expenses of doing business in a community where health and civic pride must be protected.

Airborne wastes will be more tightly controlled, so that the steel plant of tomorrow will be even cleaner than the best of today.

Research

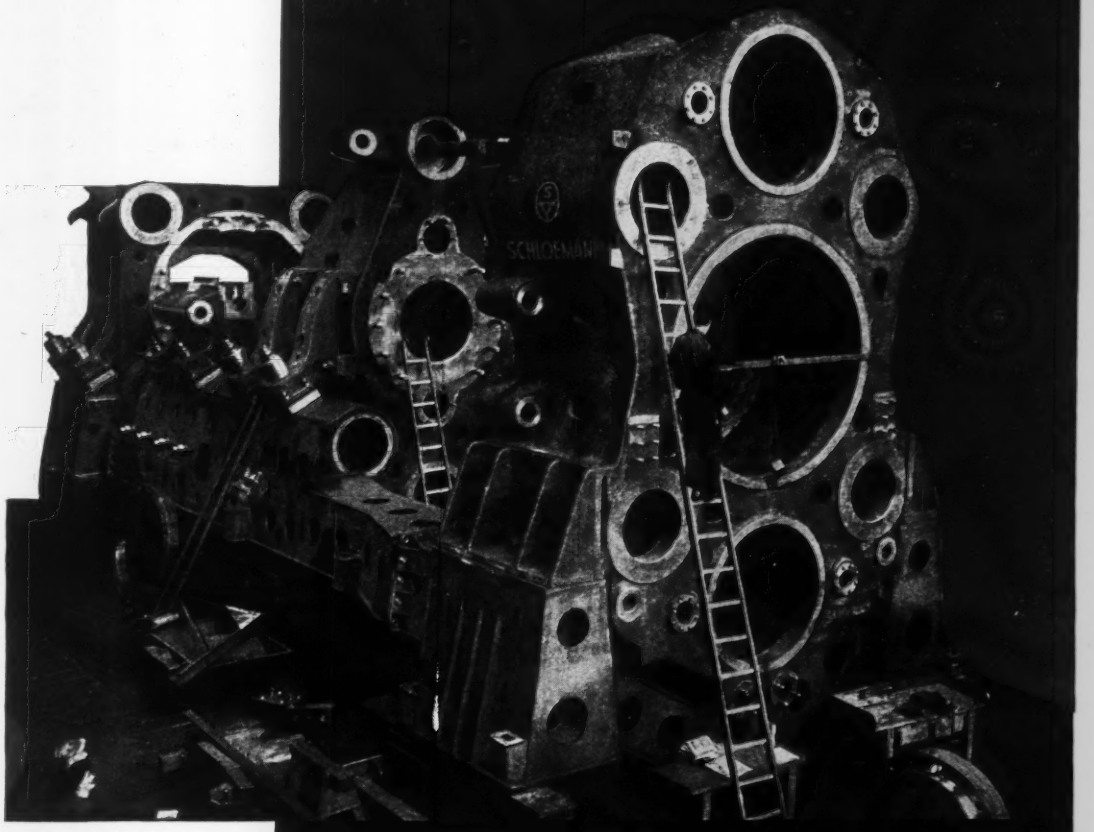
Steelmen will try anything once. A great deal of the gain in productivity has come from their willingness to try out new products and modifications on operating equipment.

But this is cut-and-try experimentation in its most wasteful sense. Trials have to be sandwiched between standard operations, or so many variables have to be introduced in the experiments that results aren't clear.

An untold number of good ideas have gone down the drain because somebody "tried it once and it didn't work."

Steel companies now realize this. One of the most promising developments of the last few years has been their establishment of large ex-

SCHLOEMANN



Another 14,000 ton Extrusion Press

About thirty years ago, SCHLOEMANN pioneered the concept of providing the light metal industry with giant presses. Designers were soon able to utilize forged and extruded pieces of sizes hitherto unobtainable and of low weight and high tensile strength. Thus, the prerequisites were created for new achievements in many fields. For example: On a SCHLOEMANN extrusion press for tubes and rods – the biggest in the world – aluminum billets up to 2.5 tons are extruded into sections for airplane construction, and these sections afford a saving in weight of up to 80 per cent compared with conventional sections fabricated by rivetting or welding methods. The picture shows a 14,000 ton extrusion press during erection in the shops. This is the second press of this size which has been built by SCHLOEMANN for Aluminum Company of America.

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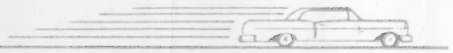

... the automotive industry does!

An upstate New York forge shop specializes in the forging of crankshafts, knuckles, and other high production items used in automotive production. Because the volume of each particular forging is very high, it is possible to evaluate costs and study tooling very closely

In the illustration above, the manufacturer is using Durodi for both the blocking and finishing crankshaft impressions in this forging press operation.

Durodi, made by Finkl electric furnace quality steel practice is a high volume producer and a most practical hot work tool for close die forgings. It hardens deeply and uniformly, is resistant to abrasion and withstands both shock and impact loading at high hardness. Its Special Machining Quality also appreciably reduces sinking time. All of these advantages mean more production at less cost.

Finkl die blocks are available in several grades, all sizes and tempers to handle virtually any forging requirement. Call your local Finkl representative next time you are considering die blocks or forgings. He will be glad to help you and there is no obligation.

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perimental laboratories for basic and applied research.

The belief that laboratory scale results can't be applied directly to operating equipment in the steel plant is falling rapidly. Researchers are learning how to design experiments that truly simulate operating conditions. Some particularly interesting experimental work has been done with small transparent models which accurately picture gas flow in furnaces and liquid flow during pouring.

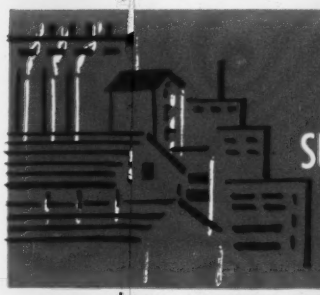
Some of the bigger laboratories are beginning to use electronic computers to study operating problems which require whole handfuls of variables to be juggled. A computer was even used by one company to design a rolling mill.

Co-operation—The new emphasis on research (accompanied by more money) can only mean a more favorable climate for the birth of ideas and their resultant fair trial. Steel companies are purchasing much research from private institutions such as Battelle Memorial Institute and Arthur D. Little Inc., while the U. S. Bureau of Mines continues to look into mineral and smelting problems common to all.

American steel companies have never gone in for big co-operative research institutions of the type found in England and France, although the American Iron & Steel Institute has done some co-operative research on a lesser scale.

Recently, six steel companies (Jones & Laughlin Steel Corp., National Steel Corp., Pittsburgh Steel Co., Republic Steel Corp., Youngstown Sheet & Tube Co., and United States Steel Corp.) joined Blaw-Knox Co., Pittsburgh, in a co-operative pilot plant trial of the Ruthner process (recovery of acid and iron from spent steel mill pickle liquor). Such joint action on a common problem is unusual now; it is likely to be one of the characteristics of the new steel era.

Free Exchange—More examples of sharing can be found at technical meetings where steelmakers gather. Never before has information been so freely given, or so many invitations issued to study the workings of competing plants. As a result, there are few secrets in steelmaking, and the customer prospers from the free exchange of ideas. The trend will accelerate.



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SUPERVISORY CONTROL OF SUB-STATIONS

A NEW FEMCO CONTROL SYSTEM

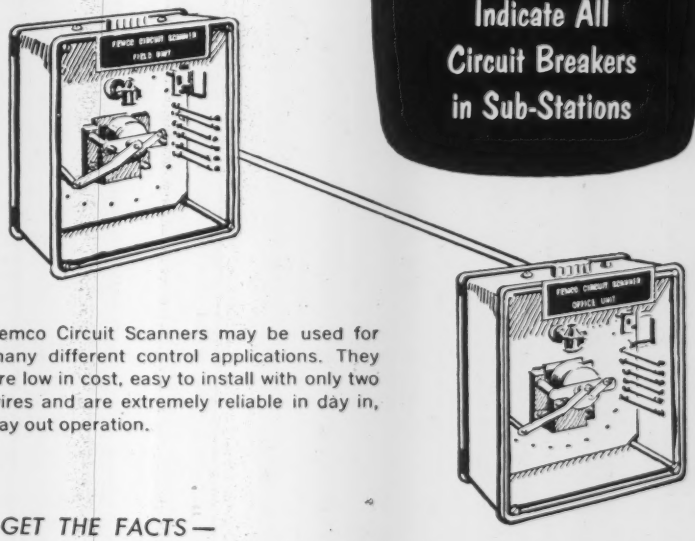
New Femco Circuit Scanners Now AC or Battery Operated

Using a single pair of wires, the system will provide supervisory control of all circuit breakers in sub-stations. Any number of stations may be wired to a central control cabinet in a single system.

Because the control equipment is powered from a separate source independent of the equipment being monitored, systems are safer to use with little chance of simultaneous power failure.

Systems may be installed to operate all on AC power or AC with standby battery or all battery-powered. Regardless of power used, the system always will be in synchronization.

Control and Indicate All Circuit Breakers in Sub-Stations



Femco Circuit Scanners may be used for many different control applications. They are low in cost, easy to install with only two wires and are extremely reliable in day in, day out operation.

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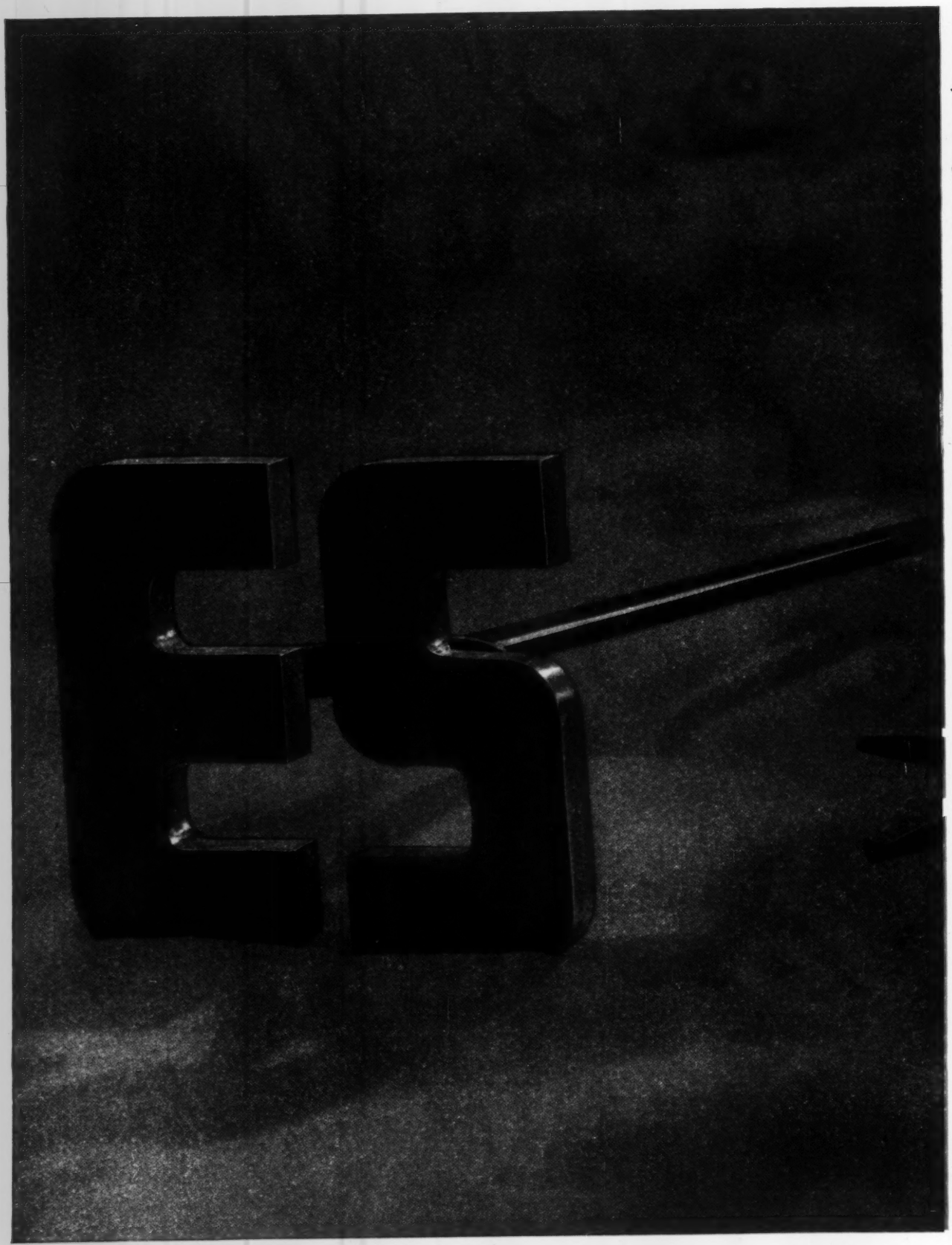

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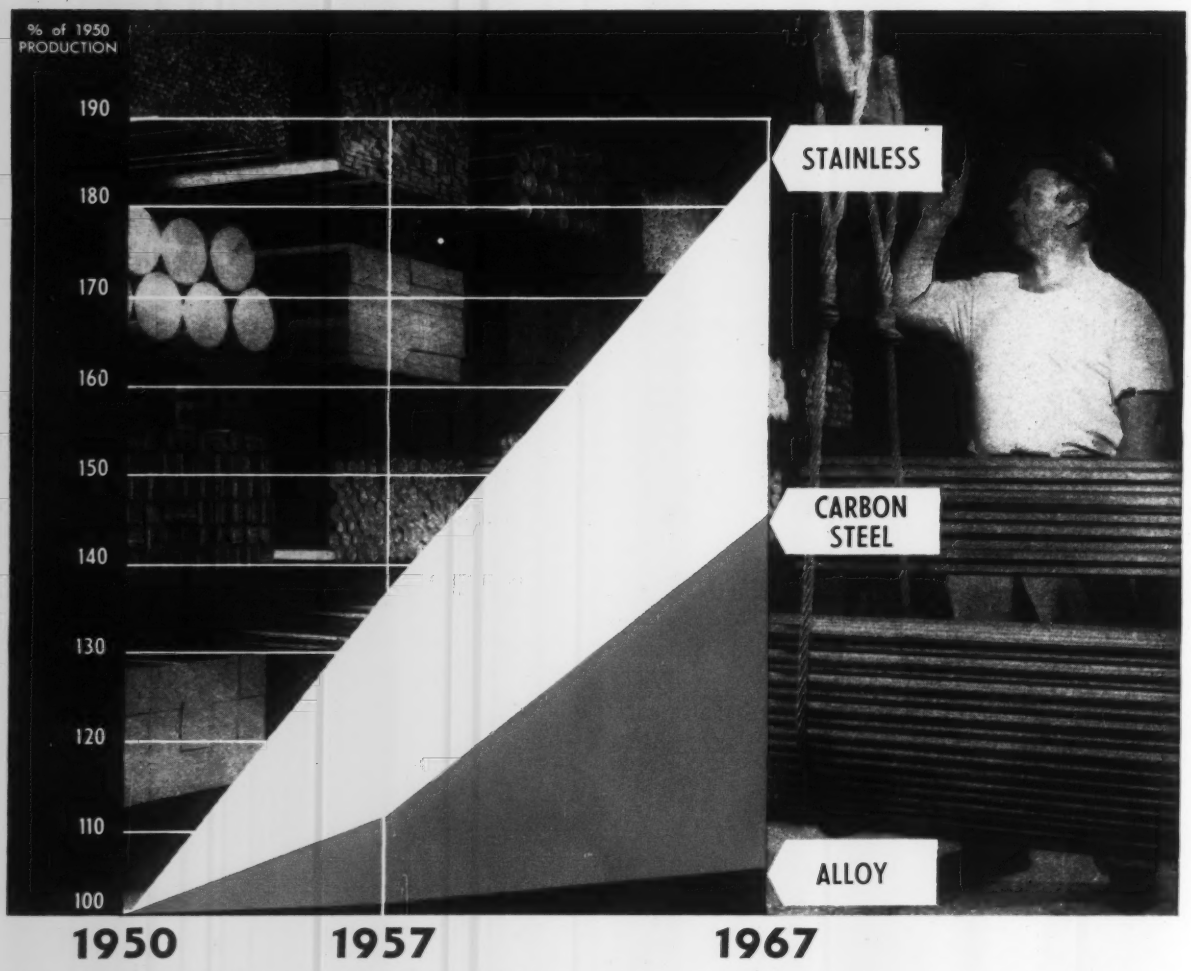


Growth in stainless, carbon steel illustrates . . .

The Change in Steel Mill Products

HOW will the steel industry's product mix change over the next ten years?

The industry's top market researchers make these forecasts:

1. Products with the biggest growth prospects:

STAINLESS—Heat and corrosion resistance, plus high tensile strength, will win it many applications.

LIGHT SHAPES, PLATES, PILING, REBARS—They'll benefit from needs for schools, roads, and urban development.

2. Products with excellent growth prospects:

TIN PLATE—Look for 3 per cent annual gain.

SHEETS—More products will be fabricated from flat-rolled steel.

OIL COUNTRY TUBING—World demand for oil will spur this market.

PRESSURE TUBING—Pace will be set by expansion of chemical and refining industries.

BARS — Automotive applications should gain.

3. Products with growth problems:

WIRE—Imports will hurt.

STANDARD PIPE—Copper will be a strong competitor; plastic pipe will make more inroads.

TOOL STEEL—New space age applications won't be enough of a plus to cancel the minuses. Sales growth will be slow.

FASTENERS—Competition from other joining methods will get stiffer.

ALLOY STEEL—Heat treated carbon steel will make inroads into this market.

4. Products on the decline:

RAILS—Downtrend will continue.

SEMIFINISHED STEEL—Inte-

gration of mills will account for losses.

Changing Markets

Requirements of some of steel's leading customers will climb above current levels in ten years. Automakers look for an 8-million unit sales year by 1965. A major producer of appliances thinks his industry, which sold 3.3 million refrigerators in 1957, can push that figure to 4.9 million in 1965. Another manufacturer of appliances foresees a 45 per cent climb in sales volume between 1957 and 1967.

Several neophyte industries will graduate to the major customer category.

Missiles and jet aircraft, for example, are expected to become top users of stainless.

Steelmakers may offer their future customers a radically-changed product. The American Iron & Steel Institute suggests that current research projects may produce bridge cables of piano wire, steel tanks that are virtually featherlight and paper thin, and girders of "match stick" weight by controlling atomic structures that determine the behavior of steel.

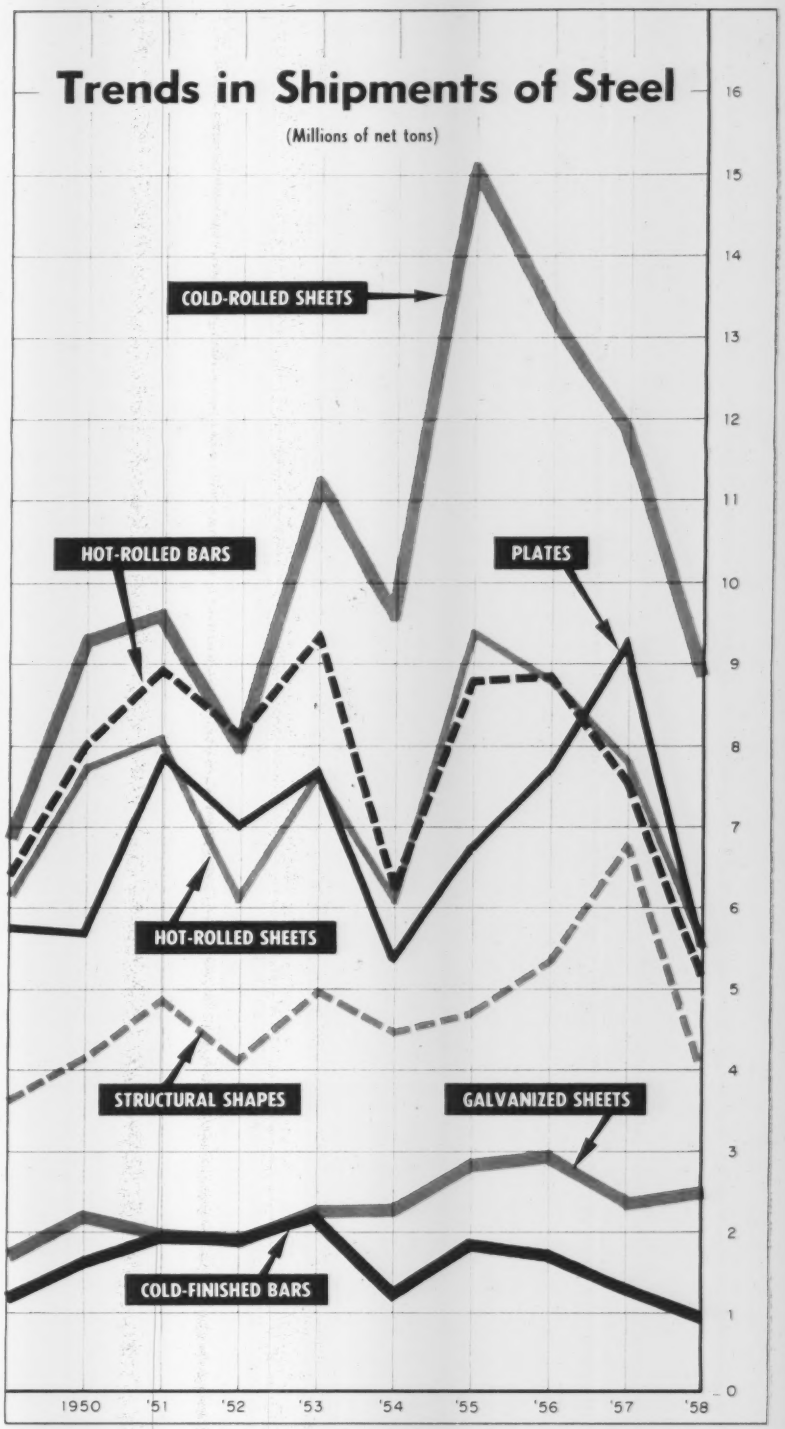
The steel industry will have to fight for new applications and to hold those it already has. Aluminum producers expect to take a larger share of the automotive and container markets. Nonmetals will also become stronger. Tin plate vies with glass, aluminum. Standard pipe competes with plastic pipe, as well as copper. Look for more steelmakers to add plastic and aluminum-coated sheets to their product mix.

10-Year Outlook: 9 Products

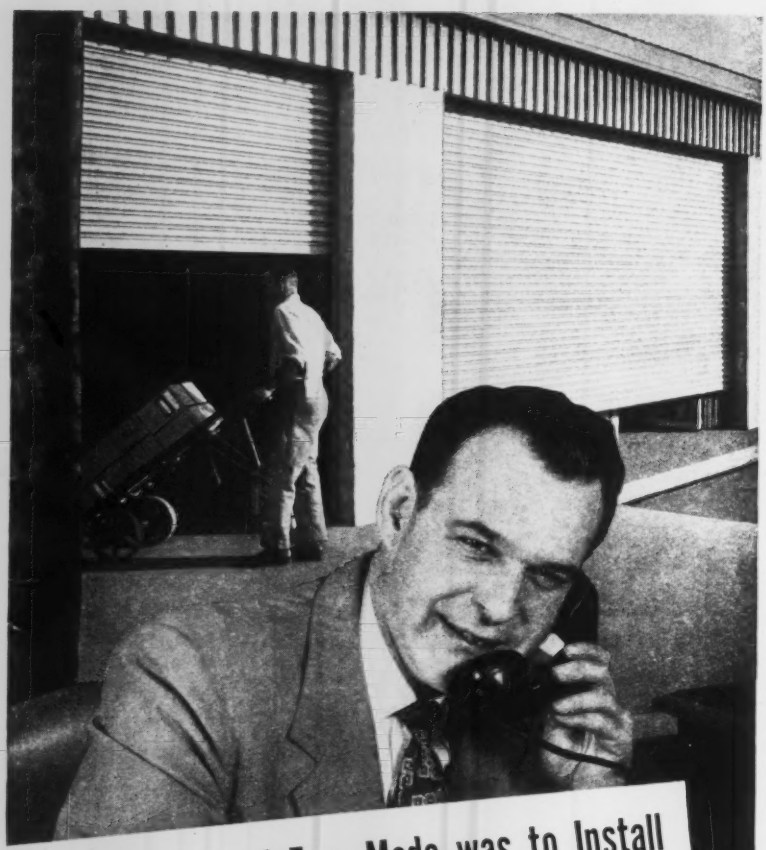
Structural Shapes—Prospects are excellent. Wide-flange beams will continue to take a larger proportion of output.

The trend is to light structurals, reflecting the transition to low, one-story industrial plants. Heavy structurals will decline proportionally.

Plates—They'll share in several fast-growing areas. Needs will climb in line pipe, power generating equipment, and construction. Shipbuilding requirements may grow. Few products have brighter long range prospects.



Bars — Shipments will probably not grow as rapidly as the steel industry average (3 per cent annually). Growing emphasis on cold heading by automakers may stimulate that industry's consumption. Many cast or forged parts can be made at a saving by cold heading, auto suppliers say. But broader adoption of the method may not substantially change bar use per auto—many parts that will



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—and here's why . . .

"It's amazing how they withstand year after year of hard daily use, with so little maintenance!

"They save floor and wall space . . . even leave ceiling areas clear for maximum crane, hoist and lift-truck efficiency.

"Good protection, too. Not only against wind and weather, but real all-steel protection against vandals, intruders, and troublemakers."

Kinnear Rolling Doors are made any size, with motor, manual or mechanical controls. Easily installed in old or new buildings. Kinnear's heavy galvanizing assures lasting resistance to the elements, and Kinnear Paint-Bond permits quick, thorough paint coverage with maximum paint-grip. Write for full details.

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be cold headed are now made on screw machines which also use bar stock.

Sheets—Sales will grow but the rate will probably be slower than the industry average until automotive sales move toward the 8-million mark in the early sixties. Gains won't be due entirely to use by automakers. An increasing number of consumer durables will be fabricated from light, flat-rolled steel in high-speed operations which lower per unit labor costs.

Tonnage sold to automakers will increase, but the amount of sheets in the average car will change little. The trend toward more glass will probably reduce roof areas (cold-rolled sheets). Consumption of hot and cold rolled sheets in hoods, decks, and quarter panels will remain steady. No important changes in gage requirements are anticipated.

All buyers will become more quality conscious. They will demand sheets which are wider, more formable and receptive to coating. Producers of electrical sheets will strive to provide longer life for motors and generators. Reports an appliance producer: "We will require sheets with the capacity to accept and retain better and lower cost finishes. We're trying to develop one-coat enamels which will reduce cost and improve quality."

Look for a reduction in the use of cold-rolled strip in the average car. By 1968, aluminum will replace it on some car bumpers. By the end of the sixties, the light metal will displace steel in a few forged parts and also in covers and shields that are now stamped from cold-rolled sheets.

Sheets won't share directly in the growth of the appliance industry. Trends to combination units (washer-dryers, for example) cut down slightly on the need for steel per unit, as does the move to more built-in units.

Tool Steel—Suppliers see opportunities in aircraft and guided missiles. (With heat treatment, the material retains its properties at the elevated temperatures generated by friction, producers say.) But the product's growth is not expected to match the steel industry average.

Applications in the structural parts and skin of high speed air-

For Northern Cranes

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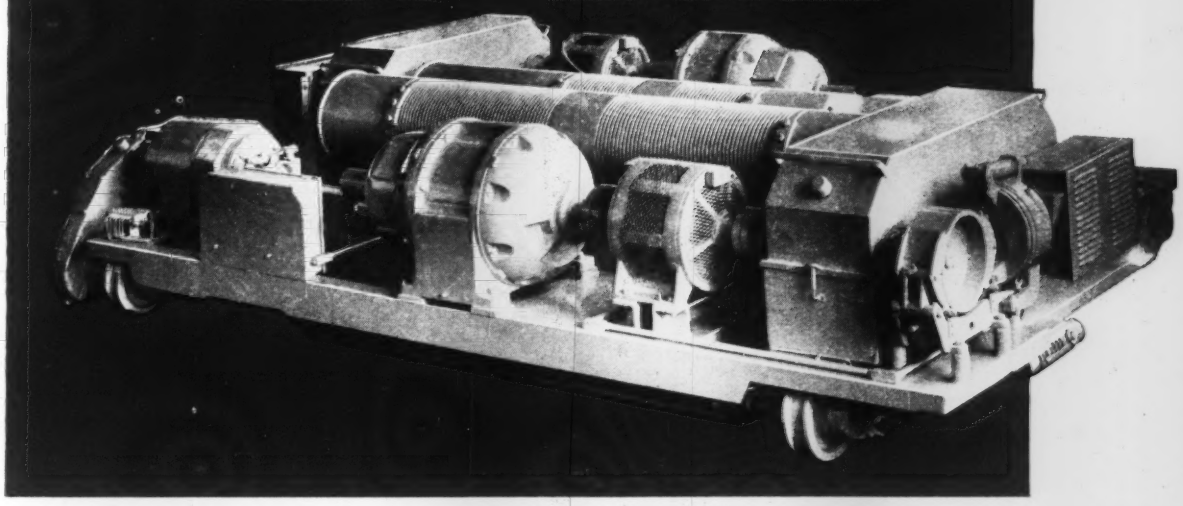

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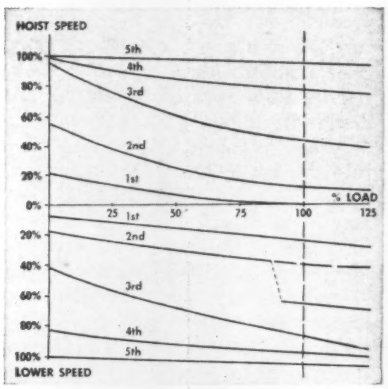
EASIER *to understand*

EASIER *to handle any load*



TYPICAL SPEED CURVES WITH EZOMATIC CONTROL

The new simplified, smooth, accurate control for alternating current hoist motors utilizing full magnetic control combined with an eddy current brake. This improved control arrangement is easier to operate, easier to maintain, makes handling any load easier, safer, more accurate. Regardless of load the speed characteristics both hoisting and lowering are excellent, allowing smooth handling and accurate spotting of any load.

Standard control components familiar to all electrical maintenance and operating men are used throughout. Circuits are simple and readily understandable. No complicated electrical schemes. Used with a standard eddy current brake eliminating mechanical and electrical wear.

Excitation of the eddy current brake is automatically controlled by the motor speed allowing extra smooth acceleration. If fast acceleration is desired it may be obtained by moving the master switch to the last point, thereby eliminating the eddy current brake excitation. Off point braking is provided automatically to assist the motor brake in stopping the load. The motor brake is automatically applied in lowering if the eddy current brake excitation should be interrupted. Speed curves can be readily changed in the field, either up or down by a simple adjustment. When very heavy loads are handled extra lowering speeds are automatically provided.

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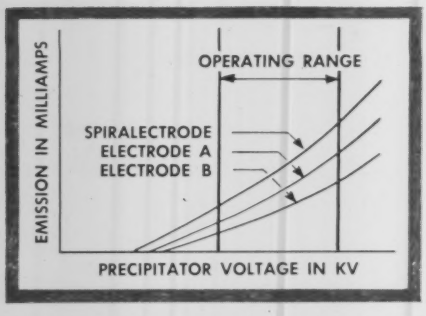

Above chart illustrates the superior emission of the Spiralectrode: its corona voltage is lower and its emission is higher than other types of emitting electrodes over the entire operating range of industrial precipitator voltage.

The superior operating characteristics of Spiralectrodes contribute to continued high efficiency of Buell 'SF' Precipitators. Detailed information of this and other exclusive features are described in a booklet, "Buell 'SF' Electric Precipitators." Send for your copy: write Dept. **26-I,** Buell Engineering Company, Inc., 123 William Street, New York 38, New York.

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craft require high quality, close tolerances, and more rigid decarburization limits. Melting techniques and improved rolling and annealing practices are being developed to meet the requirements.

Stainless Steel—Producers think sales will continue to advance at more than the steel average. Several optimists predict a 100 per cent gain in the next decade. Utensil and curtain wall applications will keep the metal in the public eye and may indirectly contribute to its sales growth in consumer products.

Salesmen look for steady expansion in several markets, including architecture, aircraft, atomic energy, food preparation, chemicals, and petrochemicals.

Consumers of sheets will press for "table top" flatness, better finishes, improved resistance to heat, corrosion, and abrasion, and greater width. They'll probably continue to grumble about prices and switch to cheaper metal when they can.

Steelmakers expect accelerating demand for high temperature steels for aircraft, missiles, and satellites. Vacuum-melted metals will grow as much as 500 per cent in the next eight years. (They're used in jet engine parts and in nuclear applications where they fill a critical requirement: Cleanliness.)

You can expect steel extrusions to play a more important role in jet aircraft in the next decade. Applications have been held down by lack of suitable extrusion equipment, one supplier says. That firm predicts an "extremely bright future" for extrusions in both aircraft and missiles, adding: "They require little machining and permit design flexibility."

A host of metals will be thrown into the battle for a share of space age applications. Beryllium, for example, is regarded as a candidate for nose cones, leading edges, electronic gear, and brake parts of jet aircraft. Zirconium is used as a coating in nuclear reactors. Columbium withstands high temperatures in jets and rockets.

Tubular Products—A major tubemaker's sales manager says: "In this year's first half, tubular shipments made up less than 12 per cent of all steel deliveries because oil country tubular goods buyers trimmed their inventories. We

predict that the proportion will gradually increase to about 13 per cent between 1960 and 1965.

"Drilling and oil field tube requirements will grow. World consumption of oil should double in 12 to 15 years. The highest domestic oil and gas well drilling rate was 58,160 wells in 1956. We estimate that about 62,500 wells will be drilled annually between 1960 and 1965. They would require 3.2 million tons of oil country goods per year. Shipments in 1958's first six months came to only 545,405 tons.

"Improved physical properties of oil country tubing are a must. In 1945, only 19 per cent of industry casing shipments had minimum yield strength of 80,000 psi or more. In 1957, 31 per cent met that standard. By 1965, we expect the percentage to increase to about 43 per cent."

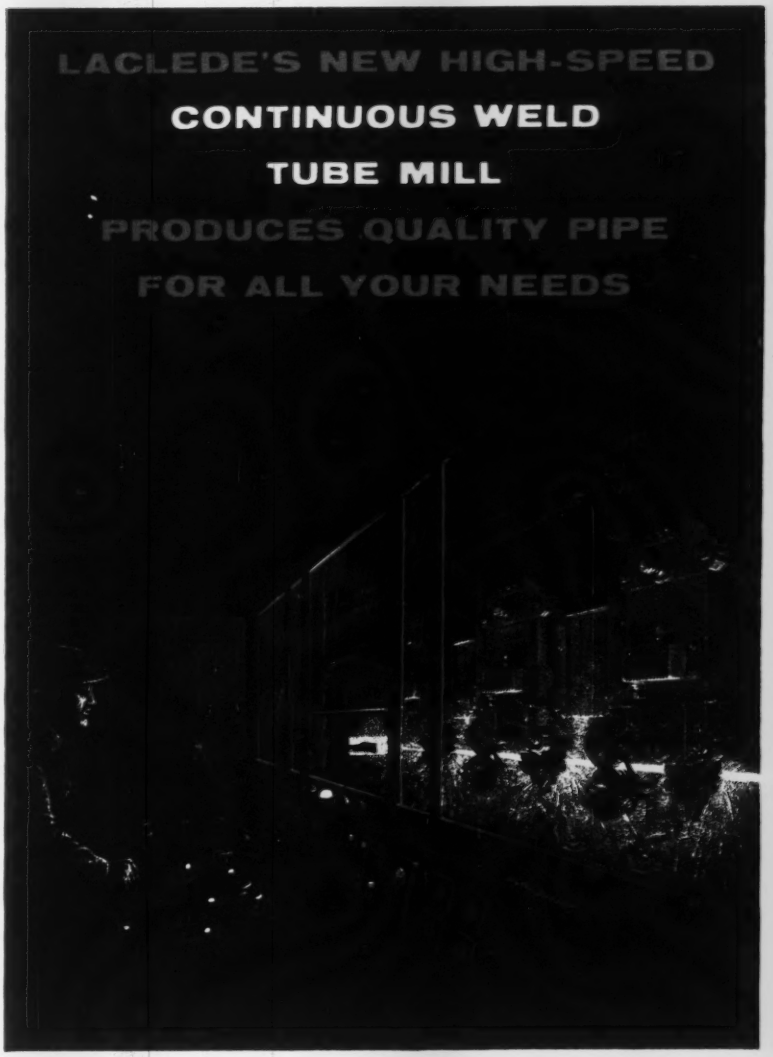
The outlook isn't entirely favorable. Plastic pipe sellers say their product can replace steel in many locations where heat and pressure are not a factor. (Many household uses are involved, including drainage, sinks, and tubs.)

Tin Plate—A major midwestern producer looks for an average annual gain in sales of 4 per cent. Two larger manufacturers, observing competitive inroads of aluminum, glass, paper, and plastic, peg the yearly improvement factor in the sixties at 3.5 per cent.

Any losses to competitors are expected to be partly made up by markets like canned milk and carbonated beverages. Tin plate sellers will make progress slowly. They say perfection of a canned milk concentrate may be five or ten years away. Soft drink bottlers won't switch to cans rapidly because they'd have to invest in new filling equipment.

Wire—This product will share in the boom in bridge and building construction. The big application: High tensile wire strands in prestressed concrete. Quality standards will be jacked up because a broken wire means loss of an entire section.

On the minus side: Wire imports show no sign of weakening. Use of upholstery spring and electrical wire in autos may be lower by 1968. Developments in plastic foam products will make it possible to eliminate springs in car seats.



Continuous weld pipe, in sizes ½ inch through 4 inch and in lengths up to 60 feet, is now available from Laclede's new high-speed continuous weld tube mill.

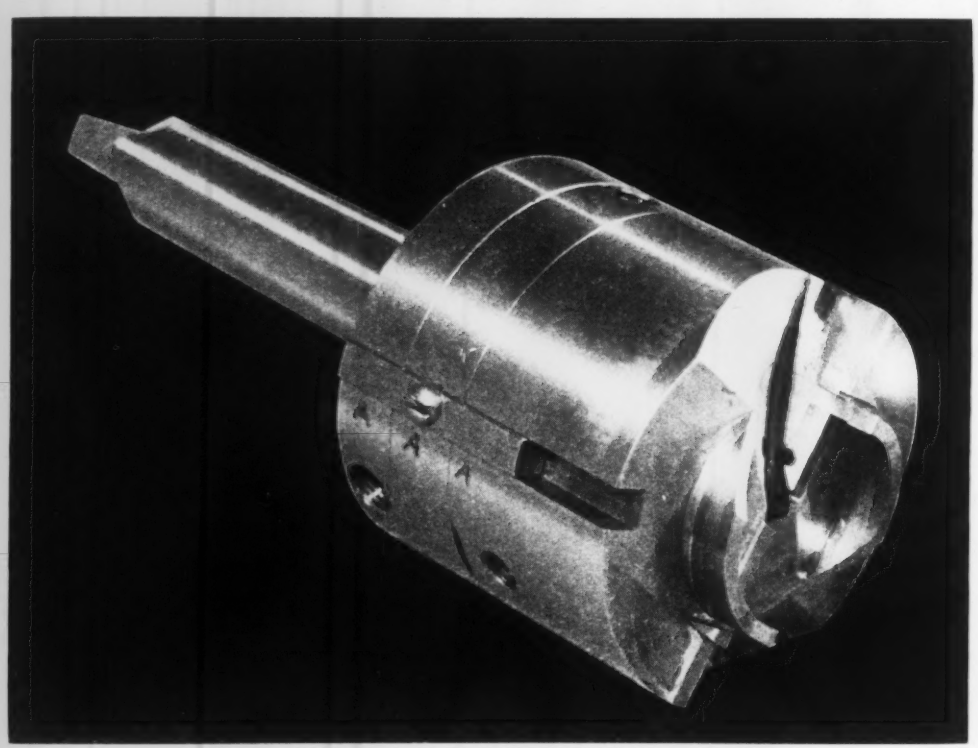
Made with uniform physical characteristics, pipe from Laclede's new mill is quality controlled . . . every step of the way . . . assuring quality tubing at its best.

LACLEDE STEEL COMPANY

Producers of Quality Steel for Construction and Industry

SAINT LOUIS 1, MISSOURI

THE JOB: Machine the face and grooves in microwave components.



This trepanning head does four jobs at once

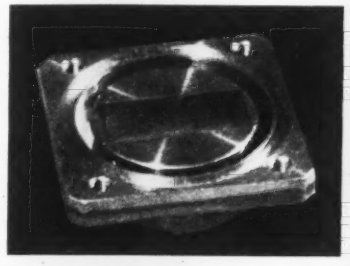
How We Beat the Cost Crisis

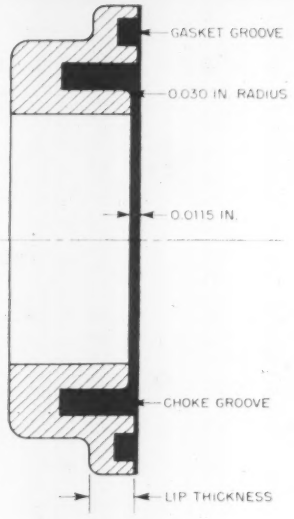
Better Tooling Cuts Part

Savings are translated into price reductions that put the company in a better competitive position. It's a good example of intelligent investment in efficiency. The article is one of the top entries in the Cost Crisis Awards Competition. Another will be published in next week's issue

COMPETITIVE markets always dictate close attention to manufacturing costs. Management at Technicraft Laboratories, Thomaston, Conn., faced the problem in the marketing of microwave components, particularly flanges.

Robert W. Witty, production engineering supervisor, says: "Some competitive flanges were sold for





OLD METHOD

1. Chuck the broached forging.
2. Face part with single-point tool, so lip thickness is within tolerance.
3. Trepan the deep, 1.225 in. diameter choke groove.
4. Trepan the shallower gasket groove.
5. Spotface center diameter so it's 0.0115 in. under the lip height.
6. Cut 0.030-in. radius.

NEW METHOD

1. Chuck the broached forging.
2. Combination trepan the gasket groove, the choke groove, the spot face, and the lip face.
3. Cut 0.030-in. radius.

Cost 35%

less than ours. To be competitive, we had to lower prices." It meant cropping the costs accrued in making the parts, with no reduction in quality.

Old Way—Here's the production sequence Technicaft production men figured was too costly. The broached forging was chucked in a Warner & Swasey #3 turret lathe. A single-point tool on the cross slide faced the flange, trimming the lip to the specified thickness.

A trepanning cutter machined the 1.225-in. choke groove. Another trepanning cutter handled the 1.540-in. diameter gasket groove. A spotfacing tool recessed the face of the center diameter 0.0115 in. below the lip height. Finally, a single-point tool put the 0.030 in. radius on the outside diameter of the spotface.

New Way—To trim machining time, Technicraft engineers designed a trepanning cutter that does all but one of the cutting operations in one step. So the relatively loose tolerance (0.0010 in.) on the lip thickness is held with the machine's turret stop. All other dimensions, (some are 0.001 in.) are held within limits by the precision built into the tool. This factor is particularly important on groove and spot face depths. Formerly, reliance had to be put on turret stops.

The adding of the 0.030-in. radius remains a separate, but simple, operation. The parts are still chucked in the W&S lathe.

Gains—The new tool reduces five steps to two. Part costs have been cut 35 per cent. Production has nearly doubled—about 4000 flanges a week, vs. 2200. Because of the critical tolerances built into the tool, quality is markedly better.

Consistent quality has allowed the inspection department to check parts on a sampling basis; the old practice necessitated 100 per cent inspection.

Management O.K.'d the expenditure for the improvement when potential savings were shown. Success with this new method has led to a complete line of trepanning heads for all flange sizes.

1958 AISE CONVENTION PROGRAM

Iron and Steel Exposition **Sept. 23 - 26, Cleveland**

The exposition and all technical sessions will be held at Cleveland Public Auditorium. Exhibit hours will be 10 a.m. to 10 p.m. on Sept. 23 and 24, 10 a.m. to 5 p.m. on Sept. 25, and 10 a.m. to 4 p.m. on Sept. 26.

TUESDAY, SEPT. 23—9:30 A.M.

ELECTRICAL SESSION
(Ballroom)

Chairmen: J. A. Drgon, Edgar Thomson Works, United States Steel Corp., and B. R. King, Indiana Harbor Works, Inland Steel Co.

Industrial Telemetering Systems—Charles D. Close, Control Services Inc.

Power Dispatching in a Steel Mill—C. L. Eichenberg, Bethlehem Steel Co.

Design Concepts and Electric Drive Systems for Reversing Hot Mills—R. W. Kirkland, R. E. Marrs, and W. E. Miller, General Electric Co.

SINTERING SESSION
(Club Room B)

Chairman: W. O. Bishop, Inland Steel Co.

New Screening and Sinter Plant Facilities at Inland Steel Co.—William O. Bishop and C. P. Frame, Inland Steel Co.

Layout and Design of the Ashland Sintering Plant—Richard W. Adams, Ashland Works, Armco Steel Corp.

Weirton No. 2 Sinter Plant—G. W. Watson, Weirton Steel Co., division of National Steel Corp.

J&L's Cleveland Works Sinter Plant—K. S. Loofboro, Jones & Laughlin Steel Corp.

2 P.M.

COMBUSTION SESSION
(Club Room B)

Chairmen: W. M. Bloom, Allegheny Ludlum Steel Corp., and E. W. Fitch, Republic Steel Corp.

Monolithic Refractory Constructions in Steel Plant Equipment—Plastic and Castable Refractories Compared—George D. Cobaugh and Charles D. Hauth, Harbison-Walker Refractories Co.

Controlling Oxygen and Moisture to a Blast Furnace—J. L. Wallace, Weirton Steel Co., division of National Steel Corp.

Opened Coil Annealing—A Steelman's Dream Come True—Lee Wilson, Lee Wilson Engineering Co. Inc.

MANAGEMENT SESSION
(Ballroom)

Chairmen: H. L. Jenter, American Steel & Wire Div., United States Steel Corp., and L. A. Fugassi, Weirton Steel Co., division of National Steel Corp.

Incentive Trends in the Steel Industry—John C. Cramer, Albert Ramond & Associates Inc.

Controlling Maintenance Costs—Harold Maynard, H. B. Maynard & Co. Inc.

Increased Costs of Production in Steel: The Problem and Possible Solution—William T. Hogan, Fordham University.

WEDNESDAY, SEPT. 24—9 A.M.

ELECTRICAL SESSION
(Ballroom)

Chairmen: J. F. Kostelac, Crucible Steel Co. of America, and Richard G. Nolan, Granite City Steel Co.

Increased Production through Electrolytic Tinning Line Modernization—Donald H. Jenter, Reliance Electric & Engineering Co.

A Modern, High Speed Tandem Cold Reduction Tin Plate Mill—Nelson W. Hocking Jr., Wheeling Steel Corp., and A. F. Kenyon, Westinghouse Electric Corp.

Modernizing Granite City's Tandem Cold Mill—from a 1946 Model to a 1958 Model in Three Weeks—A. W. Schlechte and R. G. Nolan, Granite City Steel Co., and R. M. Peeples, and D. E. Rea, Allis-Chalmers Mfg. Co.

COMBUSTION SESSION
(Club Room B)

Chairmen: T. J. Harrison, Continental Steel Corp., and R. A. Lambert, Jones & Laughlin Steel Corp.

Utilization of Byproduct Fuels—R. W. Worley and R. H. Gherst, United Engineers & Constructors Inc.

Atomization of Open Hearth Fuel Oil with High Pressure Gas—J. D. Wells and Guy L. Rogers, Sheffield Div., Armco Steel Corp.

The Twin Pillars of Profit—Blast Furnaces and Power—Austin E. McDonough

(*Please turn to Page* 185)

How to measure

Now is the time to take a long, hard look

A continuous furnace is more than just a brick-lined structure built to heat a material; it is a processing tool.

Like all processing tools, it must be evaluated on an overall basis. Fuel consumption and efficiency may be completely outweighed by many more-important economic factors centering around your workpiece, your total production program, and your work force.

Your evaluation may well prove that an investment now in Selas continuous heat processing will bring immediate returns in reduced costs and improved product quality.

To help you take this long, hard look at your heat processing equipment or requirements, Selas offers these 15 evaluation factors:

- **Production requirements**
- **Equipment versatility**
- **Work in process**
- **Process coordination**
- **Automatic operation**
- **Labor requirements**
- **Material handling**
- **Material saving**
- **Human element**
- **Product quality**
- **Product value**
- **Fuel efficiency**
- **Floor space**
- **Temperature control**
- **Maintenance**

The factual report on the facing page tells how a manufacturer of rail anchors, Midwest Forging and Manufacturing Company, took this long, hard look at heating for forging. Every evaluation factor proved important; several represented significant savings and improvement in product quality.

SELAS

the real cost of continuous heat processing

. . . here's how another SELAS forge-shop installation stands up under that "long, hard look!"

Rail anchors clamp around rails adjacent to ties at intervals throughout a length of railroad track. They prevent lengthwise motion of rails across the ties and are designed to resist thrusts up to 10,000 pounds. This actually provides a margin of safety since thrusts between 5,000 and 6,000 pounds will move the ties in the ballast.

The C-shaped rail anchors are formed by forging. This Selas processing unit heats alloy steel bars rapidly, continuously and successfully for the forging process.

Production Requirements

The job requires the Selas furnace to heat alloy steel bars (SAE 5150), 1⅛ in. x ¾ in. in cross-section by 11 in. to 12⅞ in. in length, to 2000-2100°F . . . at production rates up to 620 bars per hour. The Selas unit may be slowed or speeded to accommodate demands of the forging process.

Equipment Versatility

The heat for forming, retained through forging process, is utilized for hardening: the clamp is quenched immediately after forming.

Work in Process

Inventory of actual work in process is ⅓ to ¼ that of heating equipment used previously.

Process Coordination

This Selas continuous heat processing unit fits compactly into the production line — between feeding of bars into the magazine and automatic discharge to forging bulldozer.

Automatic Operation

Steel bars are magazine fed into Selas furnace. An automatic discharge system delivers correctly heated bars at precisely fixed intervals to the bulldozer.

Labor Requirements

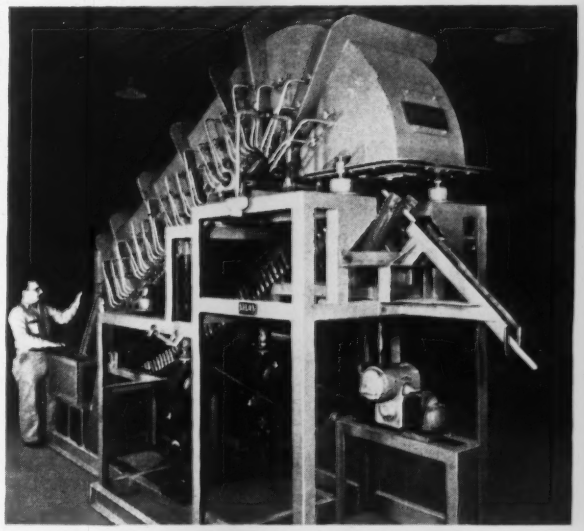
The completely automatic process requires only two operators — one to load the magazine at intervals, the other to operate the bulldozer.

Material Handling

The Selas unit is designed to facilitate periodic loading of feed magazine at convenient height, and automatic discharge to bulldozer without requiring additional handling equipment.

Material Saving

95% less scale is formed!



Midwest Forging and Manufacturing Company uses this compact Selas processing unit to heat alloy steel bars for forging. Continuous furnace is 14 ft. long, 4½ ft. wide, 9 ft. high.

Human Element

Equipment design, which utilizes height and handling power of operators to greatest advantage, also eliminates guesswork and faulty human judgment since the completely automatic heating operation actually *paces* the operators.

Product Quality

Selas precise heating assures consistently uniform grain structure and hardness, piece after piece. The cleaner surface of the heated bars — not possible with conventional heating — makes practical visual inspection for possible defects after forging.

Product Value

Using their value at the time of heating, the steel bars processed in 220 hours equal the entire cost of the Selas heat processing equipment.

Fuel Efficiency

A precisely controlled mixture of natural gas and air is utilized to create the exact temperature required for forging. Fuel cost is low . . . about 2/10¢ per bar!

Floor Space

The insertion of the Selas heating unit into the production line saved 20% of the floor space occupied by former equipment.

Temperature Control

Selas' precise control of heat rate throughout process results in rapid, safe heating on a continuous basis. Bars, delivered to bulldozer for forging, are uniformly heated with no cracks, little or no scale formation. This particular installation demonstrates the ability of Selas controlled fast heating to produce superior results . . . frequently in the face of tradition and conventional practice.

Maintenance

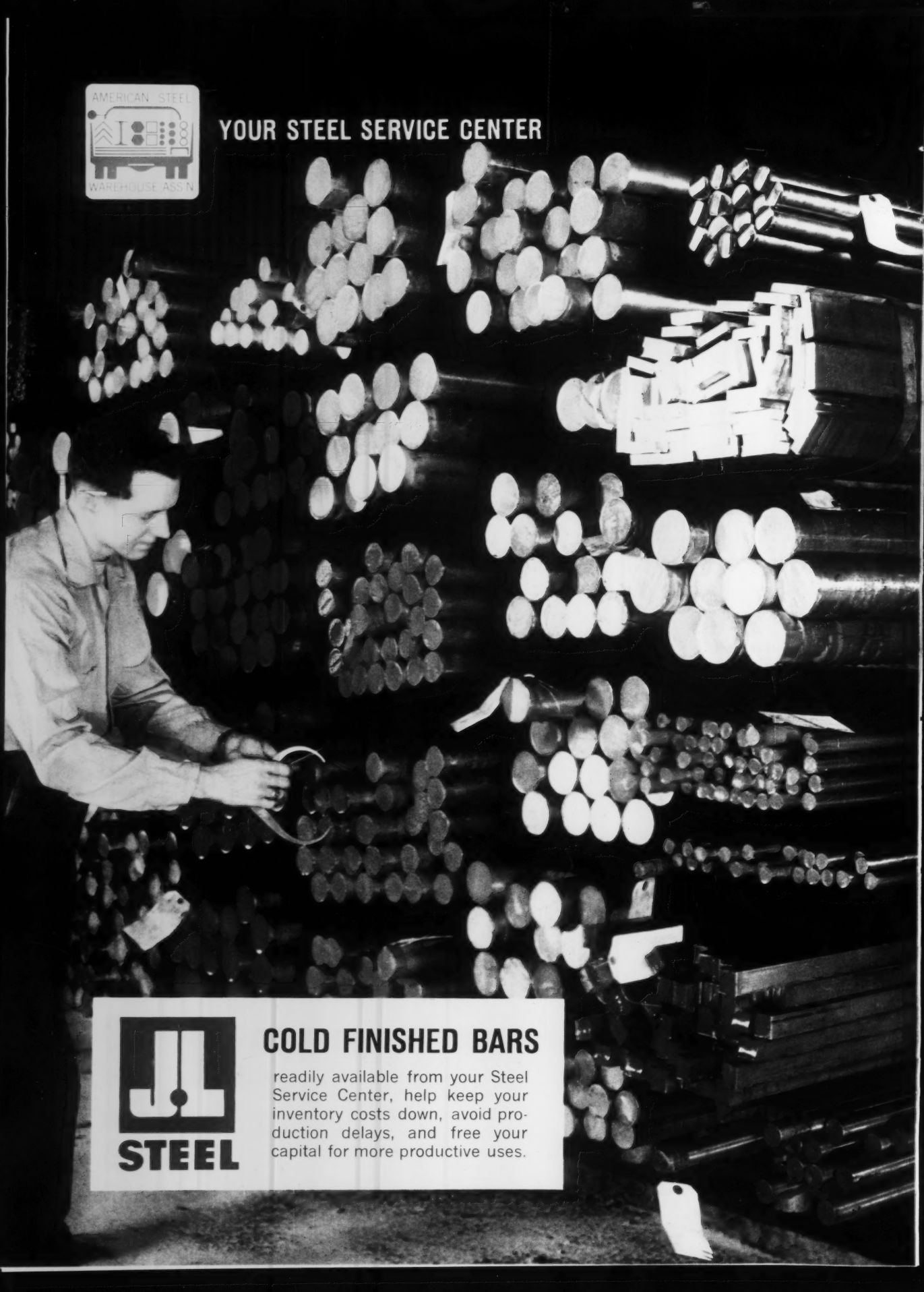
Rugged construction makes for easy, infrequent maintenance. This and all Selas equipment is factory-tested under production conditions. All equipment is set-up and started-up under Selas supervision in the customer's plants. And, since no operating equipment is better than the service available, Selas stands ready, day or night, to service its equipment on call.

* * *

For case histories covering other heating for hot working operations, as well as heat treating, brazing, and steel mill heat processing applications, send for reprint "An Economic Appraisal of Continuous Heat Processing." Address Dept. 29.

SELAS
CORPORATION OF AMERICA
DRESHER, PENNSYLVANIA

Heat and Fluid Processing Engineers
DEVELOPMENT • DESIGN • CONSTRUCTION


AMERICAN STEEL
WAREHOUSE ASS'N
YOUR STEEL SERVICE CENTER
J&L
STEEL
COLD FINISHED BARS
readily available from your Steel Service Center, help keep your inventory costs down, avoid production delays, and free your capital for more productive uses.

Have you learned the BIG LESSON from this recession?

It's expensive to tie up capital and space in steel stocks! When orders fall off, your cost of ownership—interest, space rental, maintenance, and insurance—continues.

This kind of expense for cold finished bars can be eliminated—or at least reduced substantially—by taking *planned* advantage of the services of your local Steel Service Center, your nearest distributor stocking steel products.

Virtually every steel buyer thinks of his Steel Service Center in an emergency—and this is fine. But even bigger returns may be realized by taking *planned* advantage of your Steel Service Center for your routine purchases.

Your distributor of cold finished bars has a wide variety of shapes, grades and sizes available for prompt delivery, and specialized cut-to-order service takes only a little longer. Plan to use *his* space for your steel stocks, *his* capital for inventory, *his* equipment, and *his* prompt cut-to-order service and production coordinated deliveries for higher productive efficiency. Many others already do—American Steel Warehouse Association figures reveal that over 14 million tons of steel were handled in this manner in 1957.

Steel Service Centers are a vital segment of America's steel distribution system, and the distributor nearest you stocking cold finished bars can help you reduce the cost of your steel ownership. Call in his representative and get the full story on taking *planned* advantage of the services of his firm and its facilities. And ask him to show you the new ASWA slide film presentation, "George Wilkins Fights Back"; you'll find it both interesting and rewarding.

Jones & Laughlin Steel Corporation, Dept. 544, Three Gateway Center, Pittsburgh 30, Pennsylvania.

MATERIALS HANDLING EQUIPMENT is expensive—as is the skilled labor to operate it—but you can reduce these costs by taking planned advantage of the services and facilities of your nearest distributor of J&L cold finished bars.

EXACTING QUALITY CONTROL MEASURES assure superior finish, machinability, and uniformity in J&L's cold finished bars. Your J&L distributor has a wide variety of shapes, grades, and sizes available for prompt delivery.

STEEL

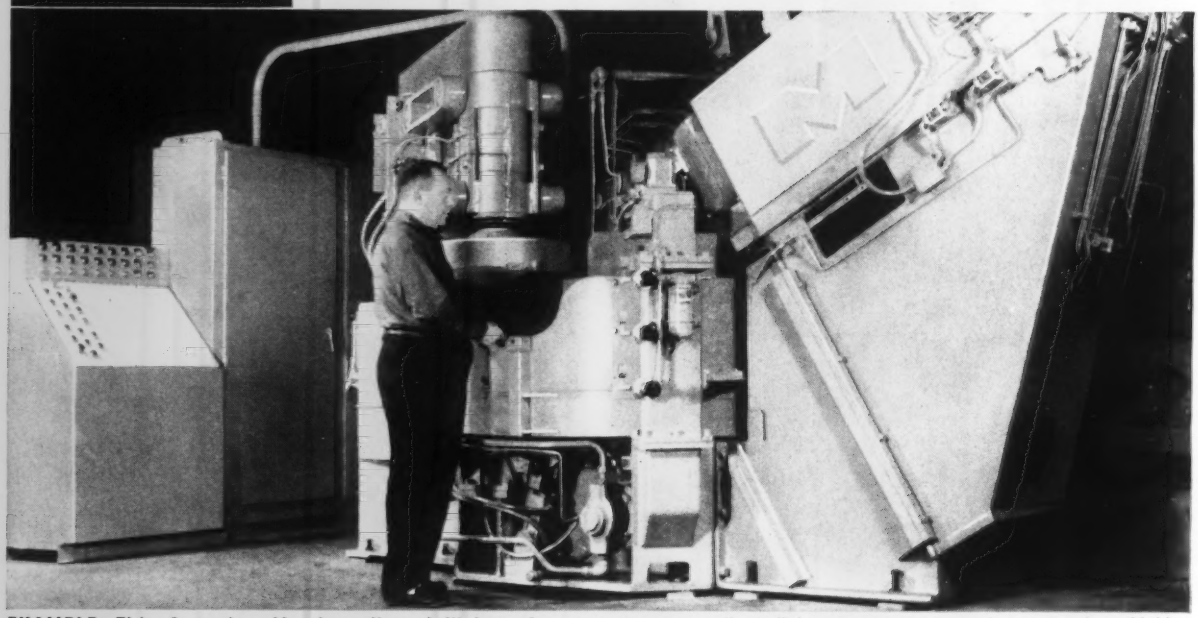
Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

MATTISON
HIGH-POWERED PRECISION
GRINDING METHODS

Machining competitively priced parts?

Consider the unexplored opportunities to save with special, multiple-operation grinders!



EXAMPLE: This 4-station Mattison "special" has three work stations, plus a load and unload station, for completely automatic grinding of head bearing sections for rock bits. The workpiece never "waits" between operations. Investment in a highly automatic special machine is long-range assurance against obsolescence and competitive disadvantage.

If your parts are competitively priced, perhaps you can save a great deal of time, floor space, and cost by combining a variety of grinding operations into a package.

An example is this special four-station Mattison grinder for rough- and finish-grinding the head bearing sections of rock bits. The work package consists of: surface-grinding the top of the bearing pin, rough-grinding the pin diameter and adjacent shoulder, chamfering the pin, and finish-grinding the pin diameter and shoulder.

Size is controlled automatically by gages which reset the grinding wheels to compensate for wheel wear. The entire machine cycle is automatically controlled. The operator's console is equipped with indicator lights that provide a visual record of work status.

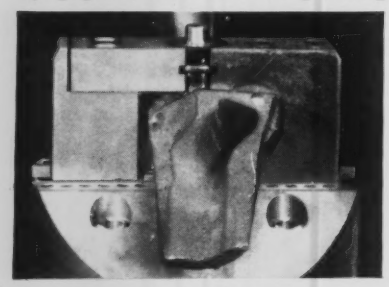


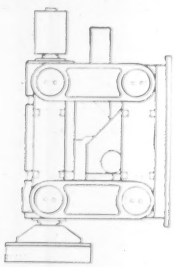
Fig. 1—This adjustable workholding fixture is easily adapted to a variety of pin sizes, from 3½ in. to 9⅞ in. Work shown is in the load-unload station.

Despite the fact that this is a high-production machine, it has considerable flexibility and can handle parts for bits ranging from 3½ in. to 9⅞ in. sizes. Adjustable fixtures (Fig. 1) adapt the grinder to a relatively wide range of work.

Parallelogram head

The Mattison patented parallelogram head is used at station No. 2. Advantages of this design include: completely sealed, preloaded bearing journals; elimination of play commonly developed in conventional tool slides; and all mechanisms completely sealed to exclude grinding dust and/or coolant.

The parallelogram head on this machine features hydraulic feed working against an adjustable lead screw stop; and both rapid approach and fine feed strokes, with controllable feed rates and adjustable limits. The lead screw features a variable increment infeed, making the head ideally suited for cycling operations and automatic size control systems.



Somewhere in the variety of cylindrical and surface grinding operations in your plant, there may be (and probably is) enough work and high volume to justify special, multiple-operation grinders. Why not investigate these opportunities and give your plant a chance to be different from, and better than, your competitors who rely on "conventional" machining methods. It won't cost you anything to find out—just pick up your phone and call:

MATTISON MACHINE WORKS
Rockford, Illinois Phone 2-5521

Want more information?

Send for bulletin describing variety of Mattison "special" grinders for high-production machining.

MATTISON MACHINE WORKS ROCKFORD, ILLINOIS

HIGH-POWERED PRECISION SURFACE GRINDING

AISE PROGRAM . . .

and George H. Kraph, South Works, United States Steel Corp.

MECHANICAL SESSION
(Ballroom)

Chairmen: R. A. Kraus, Republic Steel Corp., and S. W. Stouffer, Jones & Laughlin Steel Corp.

Cyclic Welding Method Salvages Heavy Mill Equipment—R. L. Rectenwald, Maintenance Engineering Corp.

Organizing a Steel Plant Preventive Maintenance Program—Richard F. Armitage, Warren District, Republic Steel Corp.

Cost Estimating—Metalworking Plants—A. J. Mosso, Auburn & Associates Inc.

LUBRICATION SESSION
(Club Room B)

Chairmen: N. A. Bracht, Alan Wood Steel Co., and Robert L. Humphreys, Bethlehem Steel Co.

Recent Activity Concerning Antifriction Roll Neck Bearing Designs and Mountings—E. C. Denne Jr., SKF Industries Inc.

Maintenance of Mill Oil Bearings—C. A. Bailey, National Tube Div., United States Steel Corp., and A. C. Cooper, Lorain Works, National Tube Div., United States Steel Corp.

An Approach to Wire Rope Lubrication—Louis A. Stanzione, Williamsport Plant, Bethlehem Steel Co.

THURSDAY, SEPT. 25—9 A.M.

ROLLING MILL SESSION
(Ballroom)

Chairmen: Louis Moses, Bethlehem Steel Co., and R. P. Schuler, North Mills, Inland Steel Co.

Recent Developments in Pipe and Tube Mill Machinery—Dieter Hancke and Robert Hartenstein, Mannesmann-Meer Inc.

Lone Star Steel's New Stretch-Reducing Mill—Leonard Eller, E. W. Pipe Mills, Lone Star Steel Co.

Recent Developments in Design and Control of Hot Strip Mills—Richard W. Barnitz and H. H. Shakely, Jones & Laughlin Steel Corp.

LUBRICATION SESSION
(Club Room B)

Chairmen: A. E. Cichelli, Bethlehem Steel Co., and E. J. Hochdanner, Allegheny Ludlum Steel Corp.

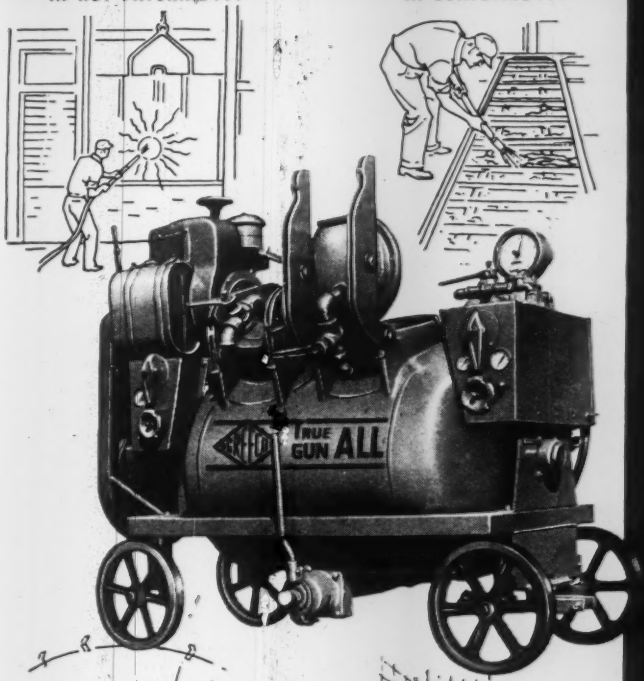
Considerations for the Application of Fire

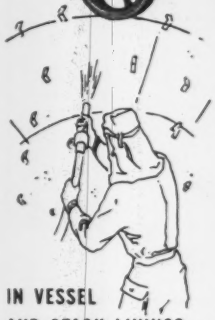
Leonard Larson, president

(*Please turn to Page* 188)

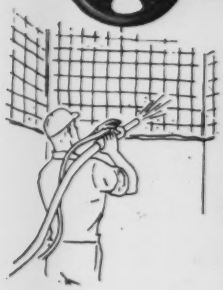
IN HOT PATCHING . . .

IN CONVEYING . . .





IN VESSEL AND STACK LININGS . .



IN NEW CONSTRUCTION . . .

GENERAL REFRACTORIES

• In numerous ways, in numerous industries, the GREFCO TRUE GUN-ALL is proving a revolutionary advance in pneumatic refractories application.

Here, at last, is a *true* all-purpose, wet mix refractory gun, handling a complete range of materials for *all* applications.

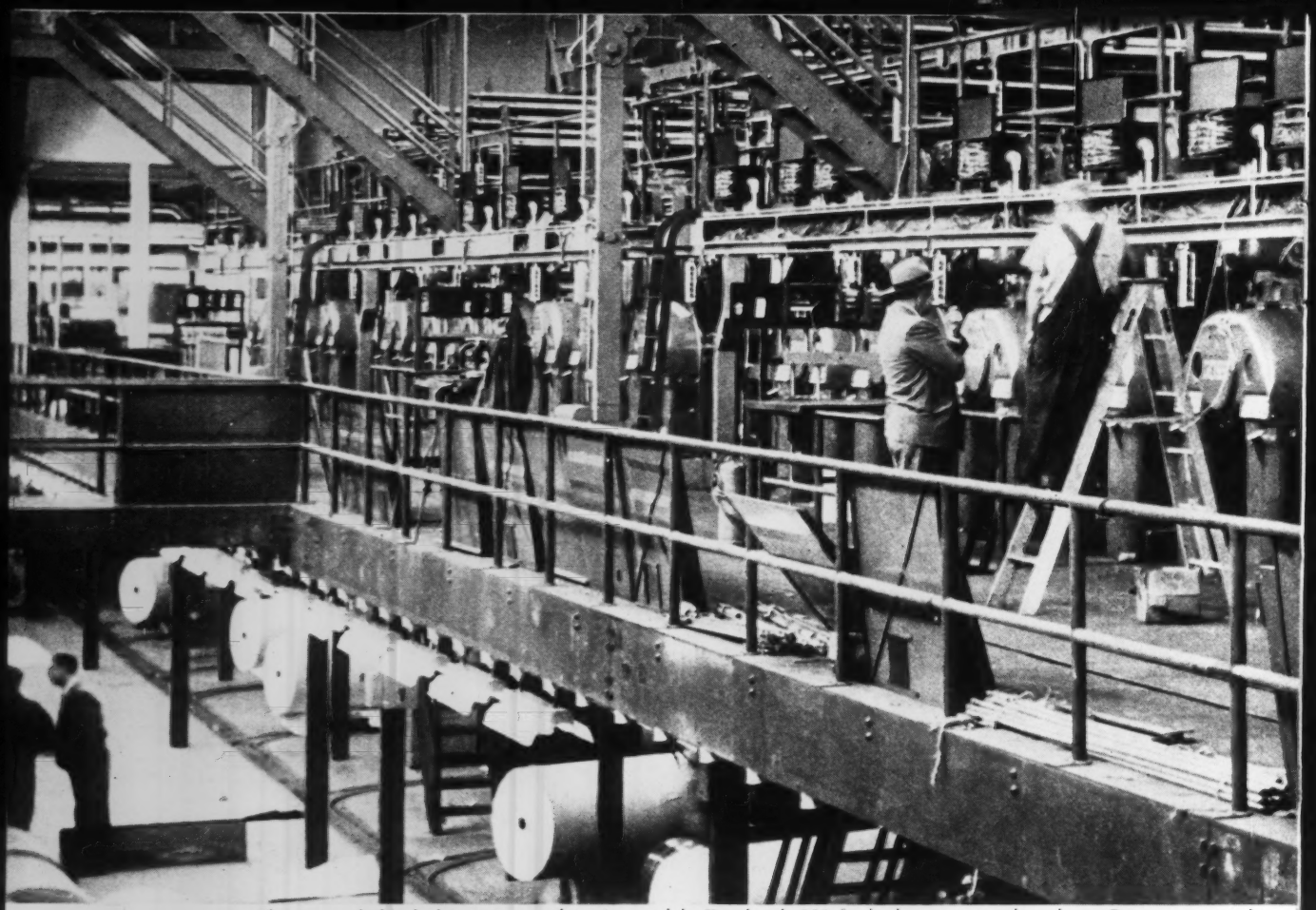
The GREFCO TRUE GUN-ALL allows *faster*, easier and more economical placement of GREFCO refractory products:

- CHROME GUN MIXES
- HIGH DUTY FIRECLAY MIXES
- MAGNESITE GUN MIXES
- HIGH ALUMINA MIXES
- COMPLETE RANGE OF CASTABLES

Write for full information on the GREFCO TRUE GUN-ALL and gun mixes.

GENERAL REFRACTORIES COMPANY
Philadelphia 2, Pa.

GREFCO



The news behind the news—is that Anaconda's Densheath 900 feeds the power to these huge Goss presses at the Chicago Sun-Times' new Fort Dearborn plant. Densheath 900's special heat-resistant insulation enables current to be car-

AT THE CHICAGO SUN-TIMES

An extra margin of safety and increased are provided by Anaconda's new

Electrician laces in Anaconda Densheath 900 for a 50-hp press-drive motor. In addition to three master panels, each press has its own control panel.

Nothing "spoils" as fast as news. Thus, in a newspaper operation, there's no time for machine breakdowns, costly delays. The news *must* get out!

To see that it does—at the Chicago Sun-Times—Anaconda's Densheath 900 is on the job powering 30 giant Goss presses, plus teletypes, intercom systems, office equipment.

In *your* business, too, power failures can mean *serious* losses. Densheath 900 has the *"built-in" extra performance* your important circuits require.

Tough, flexible Densheath 900, then, deserves attention. This top-quality industrial wire is sound insurance against power failure. Here's why:

1 **LONG LIFE.** Consistently superior performance throughout the years under the severest operating conditions.

2 **HIGH HEAT RESISTANCE.** Can safely carry higher currents under exposure to higher ambient temperatures.

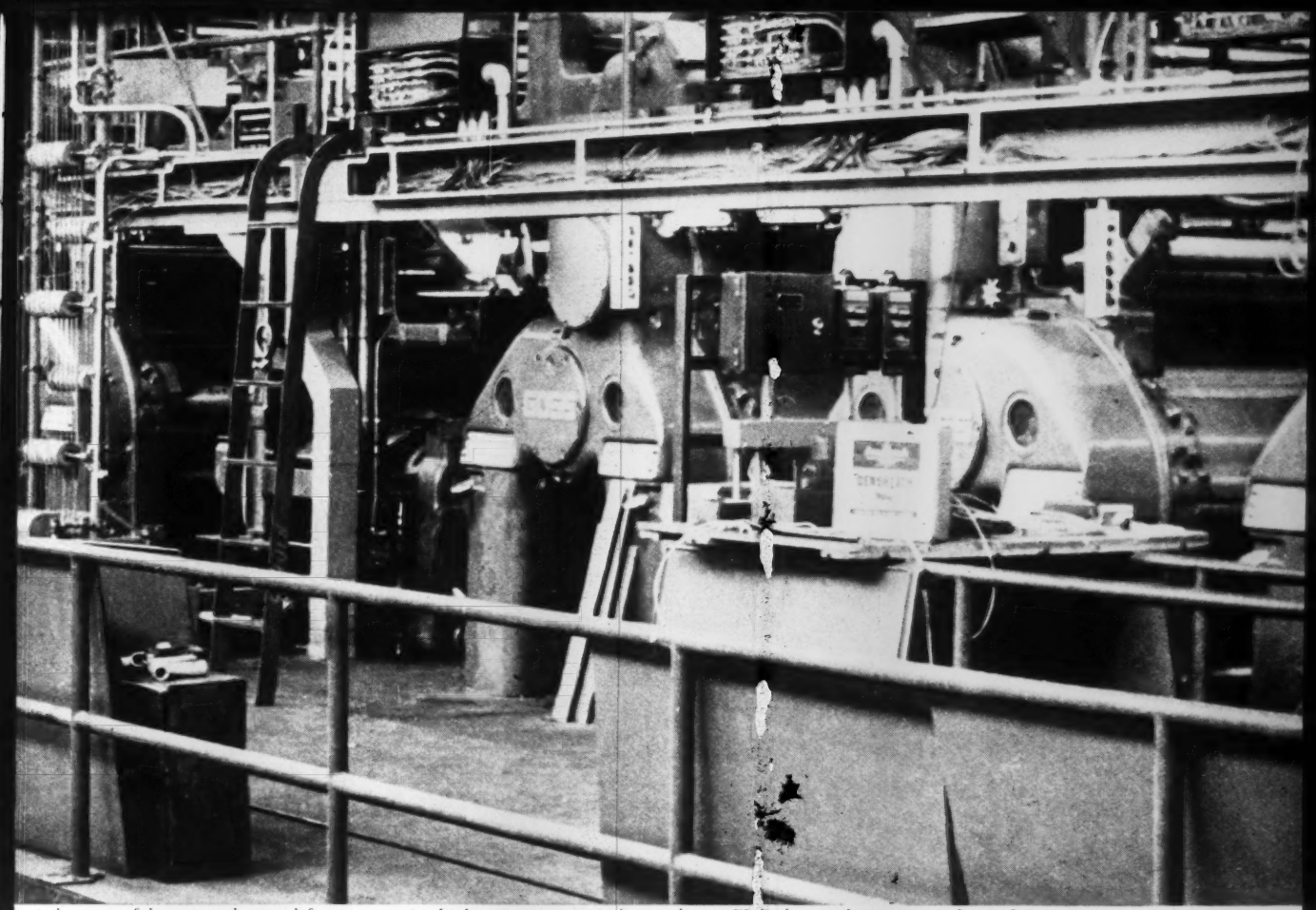
3 **CHEMICALLY STABLE.** Retains its electrical and physical characteristics despite exposure to cutting compounds, lubricants, most acids and alkalies.

4 **MOISTURE RESISTANCE.** The presence of moisture does not affect the satisfactory performances of Densheath 900.

5 **EASY TO INSTALL.** Flexible, easily formed, resists tearing, abrasion and stretching, strips easily.

6 **LESS "DRAG."** Coated with exclusive new "slipper" coat which offers less drag, greater resistance to scraping.

If yours is a plant now going to higher ambients, or higher temperature operations in corrosive atmospheres, Densheath 900 will be of particular interest. It provides an extra margin of safety for those "hot spots" which



ried more safely . . . is designed for exposure to higher temperatures than ordinary PVC thermoplastic materials. Architects for the new building were Naess and Murphy, Chicago. Electrical Contractor: White City Electric Co., Chicago.

protection against power failures industrial wire—Densheath 900!

are always occurring . . . assures superior performance from your wiring. For contractors and distributors, Densheath 900 offers another advantage: it eliminates duplicate stocks, since the one wire can be used for building construction, appliance and machine tool applications. See the Man from Anaconda or your Anaconda Distributor about Densheath 900. Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.

58304

RATINGS

The exceptional heat, chemical and moisture resistance of Densheath 900 enables it to satisfy the following:

- *U/L requirements for type TW*
- *ASTM D 734 Polyvinyl Insulating Compound*
- *90C Switchboard, Appliance and Machine Tool Wiring*
- *National Machine Tool Builders Association Specifications*

SEE THE MAN FROM **ANACONDA®** FOR **DENSHEATH 900**

LIVE BETTER ELECTRICALLY

DENSHEATH 900

Densheath 900, the 90C industrial wire, is the result of more than 20 years of Anaconda's research and development in the field of thermoplastic wire and cable. Its specially heat-resistant insulation handles current more safely . . . it is designed for exposure to higher temperatures than ordinary PVC thermoplastic materials.

Underwriters' Laboratories Inc. Labeling: Type TW, Oil Resistant 60 C. Sizes 14 Awg through 4/0-Awg also labeled as Appliance Wiring Material for use at temperatures not exceeding 90C, or not exceeding 60C where exposed to oil.

AISE PROGRAM . . .

Resistant Fluids—C. T. Lewis, Republic Steel Corp.
Standardization of Lubricants for Steel Mills—P. D. Metzger and H. D. Foster, Wheeling Steel Corp.
Microchemistry in Lubricating Oil Analysis—F. M. Roberts, Texaco Research Center, The Texas Co.

2 P.M.

OPERATING PRACTICE SESSION
(Ballroom)

Chairmen: George I. Bottcher, Allegheny Ludlum Steel Corp., and Warren E. Hart, Rouge Plant, Ford Motor Co.
Perfected and Practical Methods of Processing Powder into Commercial Strip—Richard A. Smucker, E. W. Bliss Co.
New European Developments in Blast Furnace Precipitation—B. Berg, Ab Svenska Slaktfabriken.
The Strategic-Udy Direct Iron Reduction Process--Dr. Marvin J. Udy, Strategic-Udy Processes Inc., and Robert A. Blackburn, Koppers Co. Inc.

FOREIGN SESSION
(Club Room B)

Chairmen: R. W. Holman, Tennessee Coal & Iron Div., United States Steel Corp., and Emil Kern, Allegheny Ludlum Steel Corp.
Present Situation of Japanese Steel Industry—Kichiro Saigo, Yawata Iron & Steel Co. Ltd.
The Venezuelen Steel Works—M. Gonni, Innocenti S. G. Compania de Acero del Pacifico—Chili, Its Inception and Growth —Juan Zapata, Compania de Acero del Pacifico.

FRIDAY, SEPT. 26—9 A.M.

COMBUSTION SESSION
(Club Room B)

Chairmen: David Cousley, Wheeling Steel Corp., and C. W. Dunn, Fairless Works, United States Steel Corp.
Modern Regenerative Soaking Pits—Henry S. Hall, Morgan Construction Co.
Special Features of Stelco's New Soaking Pits—E. T. W. Bailey, Steel Co. of Canada Ltd.
Heating Facilities for Youngstown Sheet & Tube's New Seamless Drill—F. C. McGough, Youngstown Sheet & Tube Co.

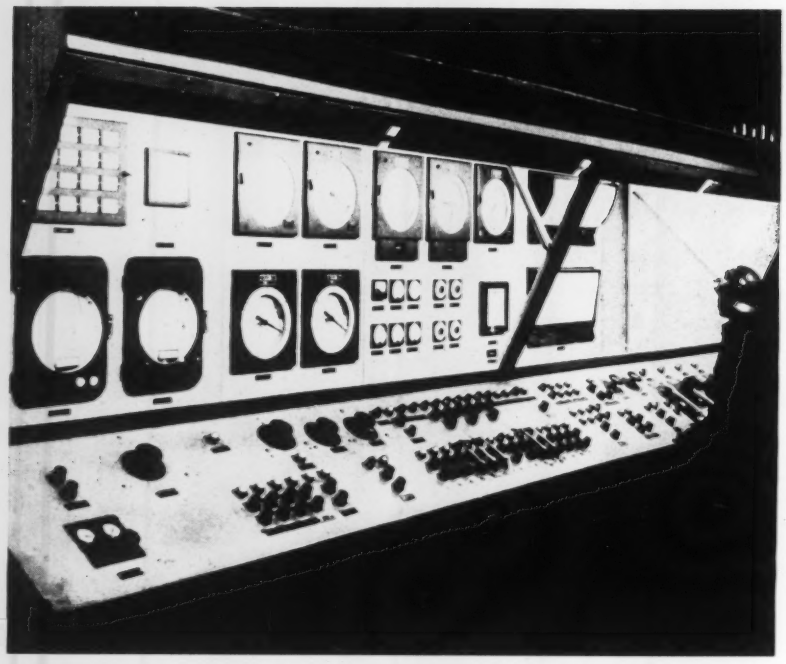
2 P.M.

OPERATING PRACTICE SESSION
(Club Room B)

Chairmen: W. H. Collison, Great Lakes Steel Corp., division of National Steel Corp., and Charles H. Good Jr., Fairless Works, United States Steel Corp.
Electric Arc Furnace Analysis via Photography—J. A. Brosovic, Republic Steel Corp.
Vacuum Pouring for Large Forging Production—Elliott A. Reid, Bethlehem Steel Co.
Nuclear Energy Applications to Steel Plant Operations—Patrick J. Selak and Rudolph Tietig Jr., Steel Plants Div., Kaiser Engineers Div., Henry J. Kaiser Co.

ELECTRICAL SESSION
(Ballroom)

Chairman: Clayton L. Squier, Bethlehem Steel Co.
E. O. T. Crane Runway Rail Installations —W. J. Tunny, Youngstown Sheet & Tube Co.
Design and Performance of Industrial Lighting Systems—Daniel J. O'Neill, Holophane Co. Inc.
Protecting Your Cable Investments — Charles van Hoy, Anaconda Wire & Cable Co.



The master control panel and console direct material for the sintering operation

System Controls Flow Rates

Automatic process electrically weighs and determines amounts of materials feeding J&L's sintering plant. Weight and speed are major control factors

An integrated control system automatically handles the flow rates of materials at Jones & Laughlin Steel Corp.'s Cleveland sintering plant. Its capacity: 2500 tons a day.

The installation processes iron ore fines into larger particles for blast furnace feed by fusing the ore with flue dust and coke breeze.

A system supplied by Trans-Weigh Co., Wayne, Pa., automatically controls flow rates of materials, keeping them in proper proportion to each other. Operators can vary the ratios or switch to manual control.

How It Operates—The flow of traveling material is measured by determining material weight on a short section of conveyor belt. Belt speed is the other factor.

Three major components make up a basic control unit: An electric tachometer-generator to detect belt speed, an electric strain gage load cell to measure belt load, and an electronic potentiometer to indicate and record instantaneous flow in tons an hour—it can include a counter to show total tonnage.

Twelve measuring units handle the moving materials.

Another New Product from "Abrasive Tech"

Fast work . . . roughing the box ends of 1½" combination wrenches with 50-X RESINALL METALITE "91" Coat Cloth Belt.

Cuts "roughing" time in half!

Here's the newest, roughest, toughest, fastest-working abrasive for the metalworking industry — "91" Coat RESINALL METALITE Cloth. It's the answer to your demand for more production plus more mileage. And a "91" Coat Abrasive Belt cuts faster.

Prove it on your toughest job in your own plant or at your nearest "Abrasive Tech" Methods Room — ask for a demonstration.

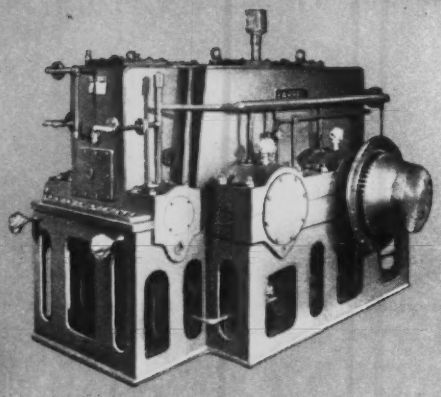
BEHR-MANNING CO.

TROY, N.Y.

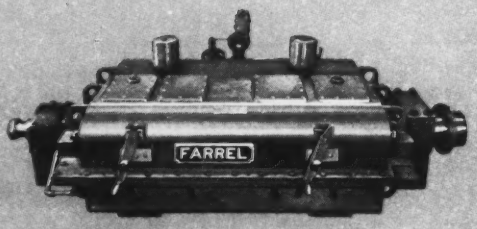
A DIVISION OF NORTON COMPANY NORTON ABRASIVES

BEHR-MANNING PRODUCTS: Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes
NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories
In Canada: Behr-Manning (Canada) Ltd., Brantford. For Export: Norton Behr-Manning Overseas Inc., Troy, N.Y., U.S.A.

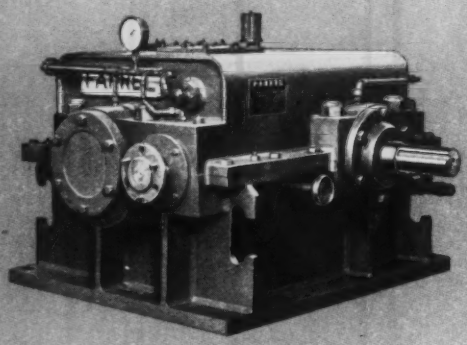
A-5



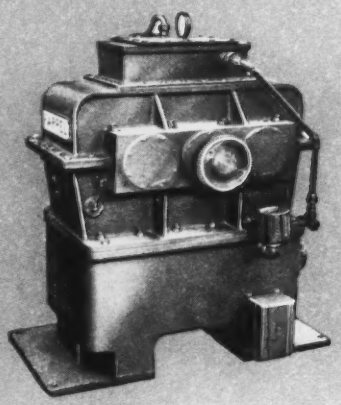
Special reversible, high-speed reduction unit, 8,000 HP, 18,000/1,295.5 RPM.



Special four-speed, in-line, cradle-mounted gear unit, 450 HP, 1,500/3,500 RPM input, ratios 1.20, 1.694, 1.939 and 1.475.



Special right-angle, speed-increasing unit, 600 HP, 2,500/19,932 RPM, with double helical and spiral bevel gears.



Special speed-increasing unit, 660 HP, input speed range: 1,500 to 3,000 RPM, output speed range: 20,000 to 40,000 RPM.

MEET YOUR TEST-STAND NEEDS

with an individually engineered high-speed unit

Each of the above gear units embodies the solutions to a whole series of problems — presented by the customers' individual requirements, and by the high peripheral speeds involved. Each is a challenge in itself.

That such units can be designed for successful operation is due to (1) Farrel's long experience in meeting "extraordinary" specifications for gear units, and (2) the inherent accuracy of the Farrel-Sykes method of gear generation.

The next time you are in the market for a test-stand unit, call Farrel. In the meantime, send for a copy of bulletin 451.

FARREL-BIRMINGHAM COMPANY, INC.
ANSONIA, CONNECTICUT

Plants: Ansonia and Derby, Conn., Buffalo and Rochester, N. Y.
Sales Offices: Ansonia, Buffalo, Boston, Akron, Ann Arbor (Mich.), Chicago, Minneapolis, Los Angeles, Salt Lake City, Tulsa, Houston, Fayetteville (N. C.).
European Office: Piazza della Republica 32, Milano, Italy

Farrel-Birmingham®

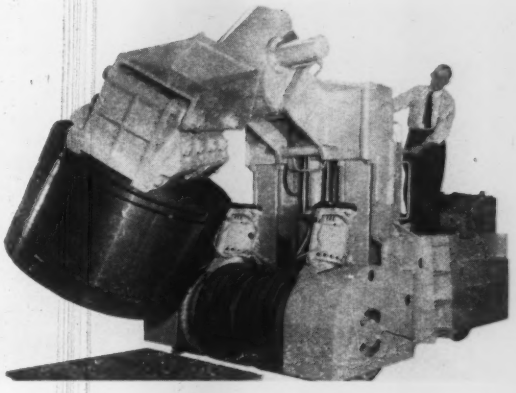
FB-1149

Heavy Tin Plate Coils Moved Quickly without Damage

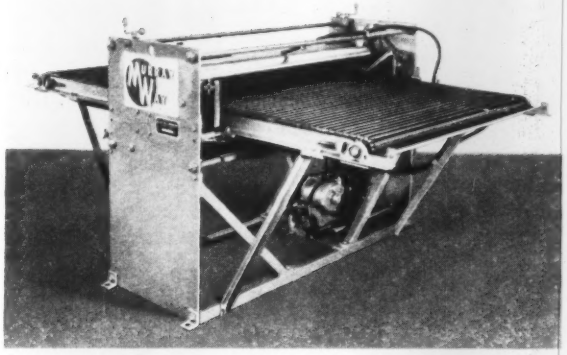
Tin plate coils weighing 10 tons and more can be moved easily and swiftly through the entire strip mill production process by a magnetic coil upender attachment for Yale heavy-duty electric fork lift trucks.

Since no clamping is necessary, efficiency of strip steel production is increased by reducing damage. Principal components are a rubber covered load ram that projects from the center of an electromagnet. This combination is mounted on a 45-degree rotator head that turns the coil vertically or horizontally.

Human error is eliminated because the ram is locked when carrying a load and can be turned vertical only when the magnet is energized. *Write*: Automatic Transportation Co., division of Yale & Towne Mfg. Co., 149 W. 87th St., Chicago 20, Ill. *Phone*: Radcliffe 3-7000



Machine Applies Accurate Coatings on Sheet or Roll



The budget priced Model C Roller Coater is for in-line application of draw compounds, waxes, sealers, rust inhibitors, paints, and varnishes.

This space-saving machine applies an accurate film thickness on one or both sides of roll or sheet stock.

A rod type, sprocket driven conveyor is optional, and will be provided in length desired. Flexing occurs only in the drive chains of the conveyor. That prevents flake-off that might contaminate the work.

The unit operates at variable speeds and can be self-powered or synchronized with automated lines. Various widths are available.

The top rolls of the coater may be fixed or hinged for ease in cleaning. *Write*: Murray-Way Corp., Birmingham, Mich. *Phone*: Jordan 4-6890

Ease of Maintenance Stressed in Rolling Mill Motors

Many features in these direct current motors for rolling mill applications are aimed at cutting maintenance downtime.

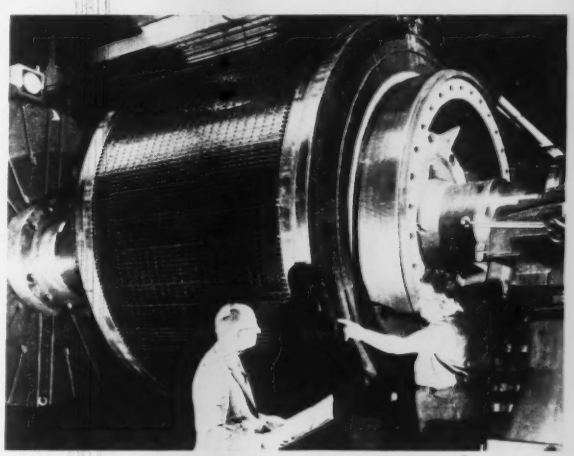
Covers over both ends can be removed quickly to provide access to the motor. All cover bolts have been eliminated.

Constant pressure carbon brush holders, standard for both reversing and nonreversing mill motors, eliminate brush pressure adjustments.

All-steel, self-locking nuts and bolts prevent loosening through vibration.

Inspection lights and utility outlets for hand tools are conveniently placed inside the motor which encourages effective routine inspection.

The 9-ft diameter rotor shown is force ventilated in both 40° and 50° C ratings, and is furnished with Class B insulation throughout. *Write*: General Electric Co., Schenectady 5, N. Y. *Phone*: Franklin 4-2211



(*Please turn to Page* 194)

For a large
CANADIAN STEEL PLANT

. . . this modern,

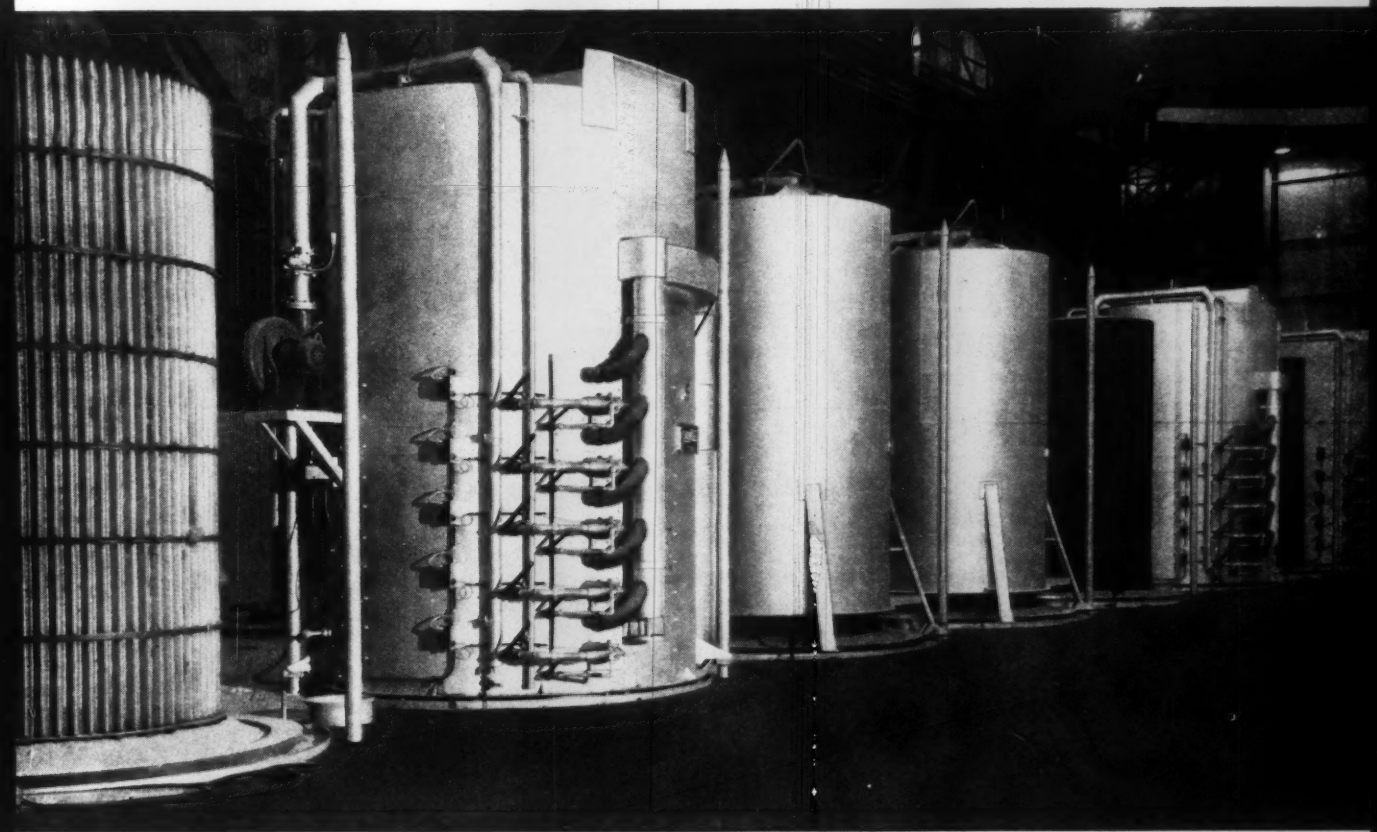
MULTI-STACK and SINGLE STACK

● ALL the advantages of combined multi- and single-stack sheet annealing facilities are provided in this Swindell Canadian installation—*plus* the economies in inventory and maintenance conferred by a single make of furnace, with major components interchangeable throughout. Six single-stack furnaces and 18 bases with cooling covers join with three four-stack furnaces and nine bases to assure complete flexibility in annealing operations at all times. ● Both furnace types feature SWINDELL *horizontal radiant tubes*—for controlled vertical temperature distribution, longer life and better heat application—and the new SWINDELL *high volume convection system*, which maintains the rugged steel mill type design for which our equipment is noted. ● Let us consult on your requirements!

flexible installation of

ANNEALING FURNACES

—providing positive control of vertical temperature distribution plus new SWINDELL high volume convection system



Swindell-Dressler Corporation provides a complete engineering service for the steel industry in the design and construction of new plants, and modernization of existing facilities. Consultations arranged gladly on request.

SWINDELL-DRESSLER *Corporation*

DESIGNERS AND BUILDERS OF MODERN INDUSTRIAL FURNACES

PITTSBURGH 30, PA.

there's so much to choose from at...

HOTEL CLEVELAND

Cleveland Room
Dine in the splendid old world setting of a grand dining room. The menu is varied, the service unexcelled.

Bronze Room
One of the brightest of the city's supper clubs. Dancing nightly from 9:00 p.m.
Air conditioned, of course.

Rib Room
A true specialty restaurant
For Fabulous Roast Beef, roasted, carved and served to your order.

MEN'S BAR
Strictly stag — is this all male haven for good drinks, good food and good talk. Plus sports events on TV.

TRANSIT BAR
For rapid service in the most unique bar in the country . . . decorated with an outstanding collection of miniature trains.

the PATIO
Pause — in the relaxing, informal atmosphere of the gayly decorated Patio. It's a Cleveland habit to say — "Meet me at the Patio."

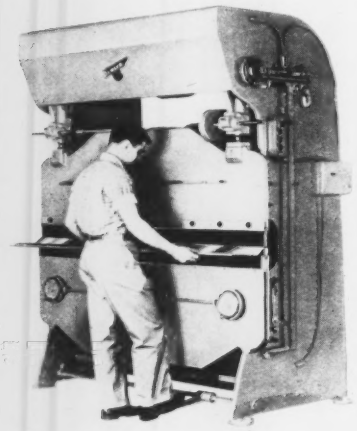
Coffee Shop
Service is brisk and decor cheerful in the modern, air-conditioned coffee shop. Enjoy a tasty sandwich or a moderately priced meal.

HCA Hotel Cleveland
CLEVELAND, OHIO

NEW PRODUCTS and equipment

Brake Has Two Speeds

A 25-ton, hydraulically operated press brake with a 6-ft bed has an



adjustable stroke and a dual speed operating cycle—with power work stroke.

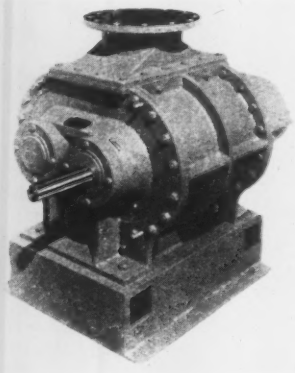
On the Di-Acro Hydra-Power Model 16-72, the operator can preset ram stroke in less than 15 seconds to the narrowest possible opening for each job.

A combination hydraulic and mechanical system powers the unit. *Write*: O'Neil-Irwin Mfg. Co., 619 Eighth Ave., Lake City, Minn. *Phone*: 6311

Blower Volume Is Precise

Guesswork as to quantity of delivered gas or air is eliminated by the 400 Series rotary positive pressure blowers. Designed for heavy duty, continuous service, these units can be precisely regulated by changing blower speed.

Operating at a constant speed



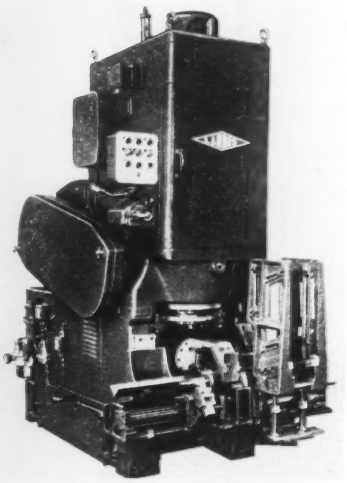
against a constant pressure, the unit delivers a constant volume of air. Blower speed is increased by means of pulley changes or variable speed drive adjustment.

They deliver air volume up to 13,000 cfm, pressures up to 10 psi, and are available in 30 sizes ranging from displacements of 1½ to 40 cu ft. *Write*: Sutorbilt Corp., 2966 E. Victoria St., Compton, Calif. *Phone*: Ludlow 3-2226

Machine Taps Couplings

The 77TA automatic coupling tapping machine is designed for the high production, precision internal threading of oil tubular and commercial couplings. The unit is pneumatically operated and electrically controlled. An operator is needed only for visual inspection and magazine loading.

The machine has a variable spindle float to maintain perfect alignment between the tap and chucked



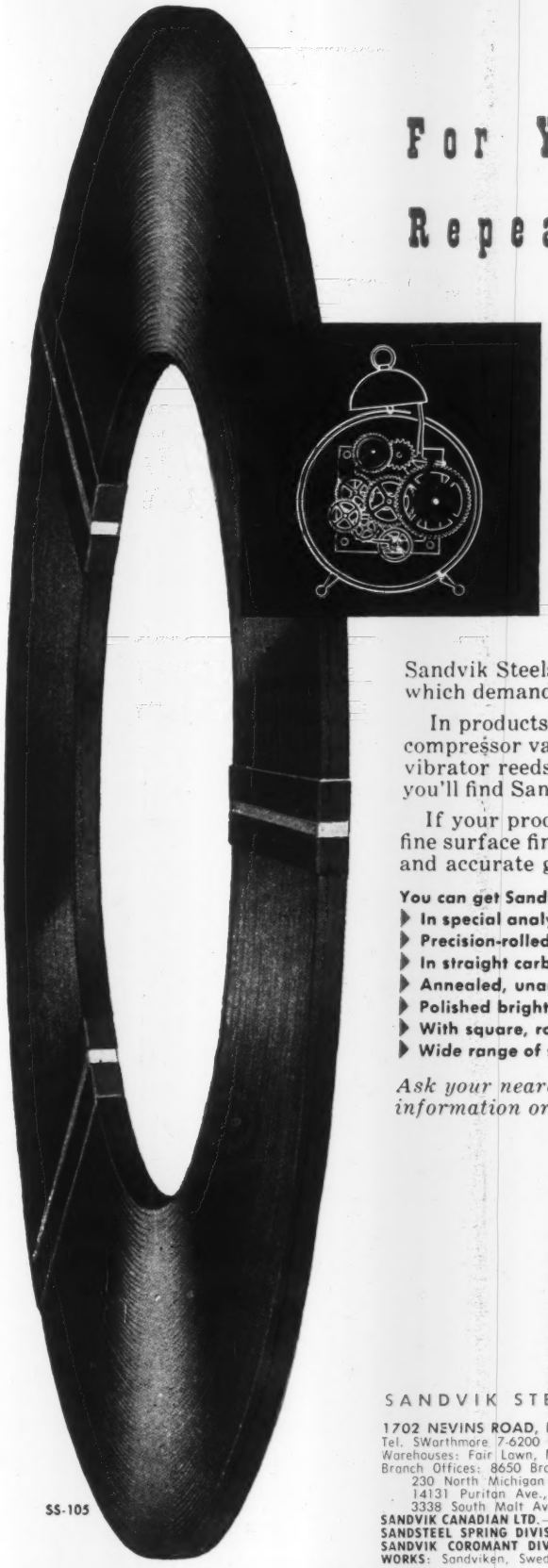
work. The float mechanism allows a 3/32-in. total compensating movement from the spindle's center line in any direction.

Standard merchant and many special couplings can be tapped on a high production basis. *Write*: Landis Machine Co., Church and Fifth Street, Waynesboro, Pa. *Phone*: Waynesboro 222

Tool Locates Blind Holes

The Blindriller enables its operator to locate hidden parts and drill blind holes.

A sensing tube in a pointer seeks



SS-105

For Years of Repeat Performance

specify SANDVIK SPRING STEEL

Sandvik Steels have a record of success in applications which demand years of consistent, continuous performance.

In products such as clock and watch springs, compressor valves, piston ring springs, vibrator reeds . . . wherever fatigue life is *vital*, you'll find Sandvik untiring in service.

If your product requires high fatigue life, fine surface finish, uniform physical properties and accurate gauge, try Sandvik.

You can get Sandvik strip steels:

- **In special analyses for specific applications.**
- **Precision-rolled in thicknesses to fit your requirements.**
- **In straight carbon and alloy grades.**
- **Annealed, unannealed or hardened and tempered.**
- **Polished bright, yellow or blue.**
- **With square, round or dressed edges.**
- **Wide range of sizes in stock—also slitting facilities available.**

Ask your nearest Sandvik office for further information or technical assistance.

SANDVIK SWEDISH SPECIALTY STRIP STEELS

are used for Textile Machine Parts such as sinkers, needles, etc. • Band Saws (metal, wood and butcher) • Camera Shutters • Clock and Watch Springs • Compressor Valves • Doctor Blades • Feeler Gauges • Knives such as cigarette knives, surgical, etc. • Razor Blades • Shock Absorbers • A Wide Variety of Springs • Trowels • Reeds: Vibrator, Textile, etc., • Piston Ring Segment and Expanders • and many other applications

SANDVIK STEEL, INC.

1702 NEVINS ROAD, FAIR LAWN, NEW JERSEY
Tel. SWarthmore 7-6200 • In New York City: Algonquin 5-2200
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3338 South Malt Ave., Los Angeles 22, Cal.—RAymond 3-9116
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SANDVIK COROMANT DIVISION • Fair Lawn, N. J. • Carbide Tools
WORKS: Sandviken, Sweden

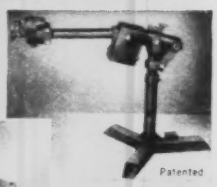
Sandvik Quality Steels

ARONSON
Offers You Over 200 PROVEN Standard Stock Models of Quality POSITIONERS "POSITIONEERED" to your exact Requirements

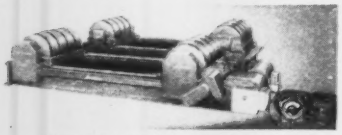
Patented

Aronson TracTred (T. M. Reg.) Turning Rolls for thin walled heavy cylindrical work to 27 tons capacity. Zero to 100 IPM turning speed and Built-In Grounding.

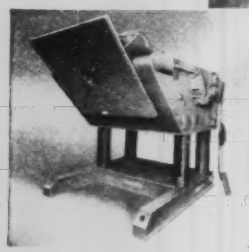
Aronson Universal Balance Positioners (T. M. Reg.) position your weldments effectively, instantly for downhand welding. Capacities to 2000 lbs.



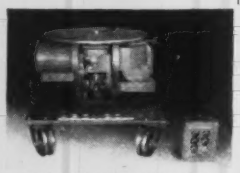
Patented



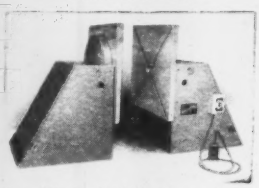
Heavy Duty Precision Built Rubber and Steel Tired Turning and Pipe Rolls, 100% overload protected. Capacities to 600 Tons.



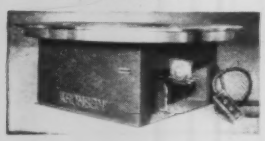
Fully Automatic Gear Driven Positioners, featuring Geared Elevation, 135° Tilting and Variable or Constant Speed Rotation. Capacities to 350,000 lbs.



Model D Gear Driven Positioners. Compact. Precise. Rugged. Capacities to 1000 lbs.

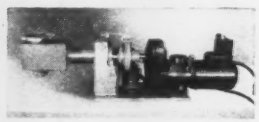


Rugged Head and Tail Stock for positioning bulky weldments between centers. Table Backup for Zero Deflection. Magnetic Braking. Capacities to 160,000 lbs. Geared Elevation Optional.



Heavy Duty Floor Turntables with precision speed control and Magnetic Braking, used for welding, burning, X-raying, etc. Capacities to 120,000 lbs., various heights and speeds.

Bench Turntable Automatic Positioners with Mercury Grounding. Capacities to 500 lbs.



Quality POSITIONERS by **Aronson MACHINE COMPANY**
ARCADE, NEW YORK

Loads are LIGHTER *with a* **Sterling**

Smooth rolling Sterling barrows, with their scientifically balanced construction, require a minimum of energy. Tests recently completed with three makes of wheelbarrows, each loaded with 320 lbs. of sand, show Sterlings require 40% less vertical force and 60% less horizontal force . . . an amazing performance record. Here are the actual figures:

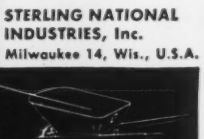
	Vertical Force Required	Horizontal Force Required
Wheelbarrow "A"	125 lbs.	22 lbs.
Wheelbarrow "B"	128 lbs.	20 lbs.
Sterling Barrow	77 lbs.	8 lbs.

Yes — you SAVE with Sterlings . . . save energy . . . save time . . . save money. Write for catalog.

STERLING NATIONAL INDUSTRIES, Inc.
Milwaukee 14, Wis., U.S.A.

Sterling WHEELBARROWS

Look for this Mark of STERLING Quality



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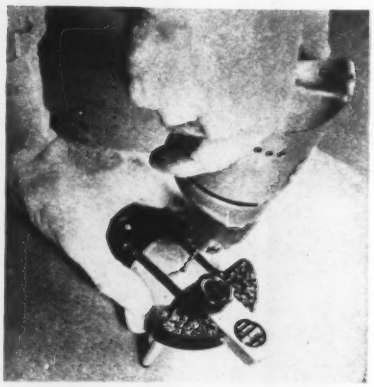
NEW PRODUCTS and equipment



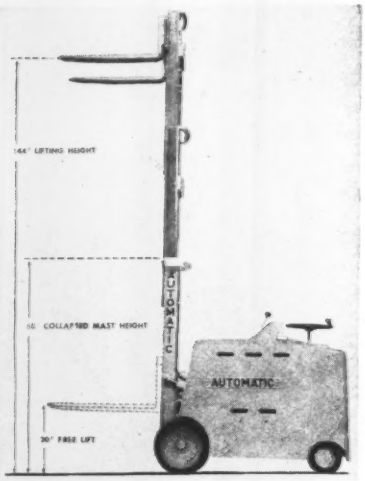
out a magnet in a hole in the opposite side of the work. A slide is positioned to bring a drill bushing directly over the hole and the drill is guided through to within 0.005 in. concentricity.

It locates concealed nails, conduits, and other installations without the use of a magnet. It can also locate layout points from opposite surfaces and speed template reproduction. *Write*: Zephyr Mfg. Co. Inc., 201 Hindry Ave., Inglewood, Calif. *Phone*: Oregon 8-4331

Lift Has Utility

The Sky-Hi-Lift moves high stacked loads from storage areas into the low ceiling, narrow confines of highway trailers.

Its mast has a collapsed height of 68 in. that can lift to 144 in., and has been designed for Automatic trucks with 2000 and 3000



(Please turn to Page 200)

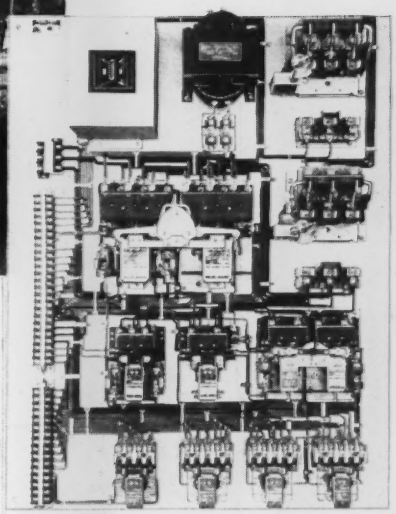
SQUARE D PRESS CONTROL

Built the Way You Want It!

Square D control is used by virtually every stamping press manufacturer in the country—and is approved by the three largest automobile manufacturers.

What's behind this preference for Square D? Biggest reason, we believe, is *completeness* of line which enables us to *custom build* to individual requirements, using *standard* control components. Actually, that has a bearing on a lot of things—including delivery, safety, uninterrupted production, maintenance parts standardization, plus field engineering service.

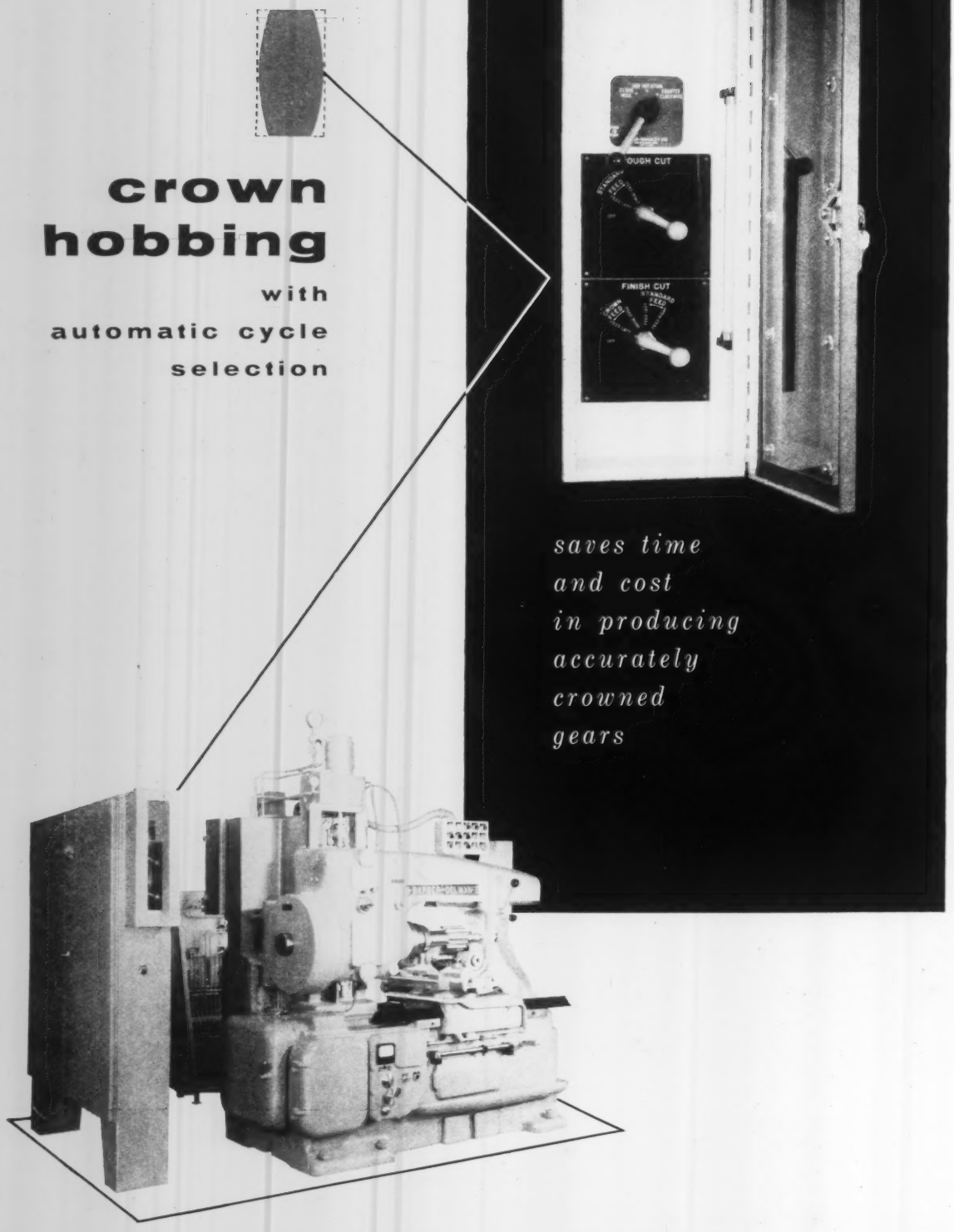
On the next press you buy, specify **SQUARE D CONTROL.**



above • **typical Square D press control panel, designed and built to customer specifications, using standard components**

***NOW...EC&M* PRODUCTS ARE A PART OF THE SQUARE D LINE**

SQUARE D COMPANY



crown hobbing

with automatic cycle selection

saves time and cost in producing accurately crowned gears

Fairfield Manufacturing Company, LaFayette, Indiana, is crown-hobbing coarse pitch pinions on this special Barber-Colman No. 14-15 Hobbing Machine. Crown-hobbing is a new method for generating crowned gear teeth. Whether shaving is required after crown-hobbing depends solely upon the finish required. If the hobbed finish is satisfactory, shaving can be eliminated. If shaving is required to produce the desired finish, crown-hobbing allows uniform stock removal by the shaving cutter, resulting in reduced production time and increased shaving cutter life.

This machine, especially designed and built for crown-hobbing, may also be used for standard gear hobbing. A choice of automatic cycles is available through settings on the control panel, including hobbing at constant depth and finish crown-hobbing, rough and finish hobbing without a crown, or single cut hobbing with or without a crown, feeding either left or right with climb or conventional cutting.

On the job shown here, Fairfield Manufacturing Company is crown-hobbing 3 D.P. pinions, 14T, 20° P.A., with 5½″ face and .008″ change in tooth thickness. The automatic cycle includes rough hobbing at constant depth and finish crown-hobbing. In cycling, the machine completes the conventional roughing cut, work slide raises, hob returns to starting position, and work slide lowers to finished depth against the crowning cam. The gear is crown-hobbed at a constantly changing depth, as controlled by the crowning cam, work slide raises, hob returns to starting position, and cycle stops for reloading. Cycle pattern and type of feed are selected by levers on the control panel as shown.

The machine may be designed to suit special job requirements, either as a single-purpose machine, or with the universal feature, as in this case, for both crown and standard gear hobbing. A cam and change gear mechanism for crown-hobbing is provided in the design of the machine for raising and lowering the work slide during the cycle to produce a change in tooth thickness. The work slide is held against the rotary cam by hydraulic pressure in addition to its own weight. Change gears are provided in the cam drive so that different amounts of change in tooth thickness can be produced with the same cam. Different cams can be designed when a different tooth crown configuration is required.

Crown-hobbing also makes it possible to hold a change in tooth thickness within the desired limits, and the tooth bearing can be located at the most desirable point consistent with job conditions.

We welcome your inquiries on crown-hobbing and suggest you send us drawings of your crowned-gears. Our engineers will analyze the job conditions and make recommendations for crown-hobbing. If analysis shows a practical application for crown-hobbing, we shall be glad to cut samples in our laboratory for your approval.

BARBER-COLMAN COMPANY

739 ROCK STREET • ROCKFORD, ILLINOIS

Hobs • Cutters • Reamers • Hobbing Machines • Hob Sharpening Machines

BARBER COLMAN

NOW... SPEED CASTING OPERATIONS WITH THIS THERMAL LADLE HEATING BURNER

MANY COST-SAVING APPLICATIONS

The extreme high heat release rate of the THERMAL burner makes possible the application of this ladle heating installation without altering your existing facilities or production methods.

1. Reduces ladle pre-heating time as much as 75%.
2. Maintains pouring temperatures during continuous casting operations.
3. Can pre-heat or even melt-down a charge within the ladle.
4. Atmosphere can be controlled as needed.
5. High velocity can actually stir the molten metal.

QUICK, ECONOMICAL INSTALLATION

THERMAL ladle heating installations are available complete with ladle covers or ready for mounting to your present cover. All necessary valves, blower, pump, etc., are supplied for immediate application.

OTHER THERMAL PRODUCTS & SERVICES

GAS, OIL & COMBINATION GAS-OIL BURNERS • HEAT EXCHANGERS • AIR HEATERS • SUBMERGED COMBUSTION • COMBUSTION & HEAT TRANSFER ENGINEERING

THERMAL

Thermal Research & Engineering Corp.

CONSHOHOCKEN • PENNSYLVANIA

REPRESENTATIVES IN PRINCIPAL CITIES

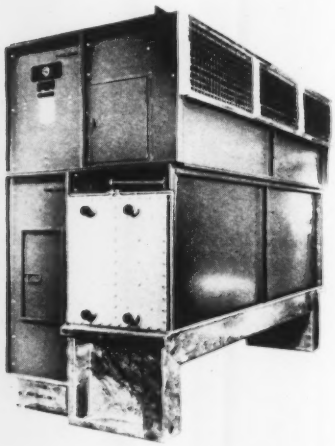
NEW PRODUCTS and equipment

lb capacities. *Write*: Automatic Transportation Co., 101 W. 87th St., Chicago 20, Ill. *Phone*: Radcliffe 3-7000

Cools Liquid and Gas

Liquid and gas cooling in industrial processes is provided by the Aero heat exchanger. Evaporation of a water spray over coils cools at a rate of about 1000 Btu for each pound of water evaporated.

It has cleanable coils and winter-summer dampers that permit out-



door installation in severe climates with no danger of damage from freezing.

A range of sizes is available providing capacities up to 18 million Btu an hour under standard conditions. *Write*: Niagara Blower Co., 405 Lexington Ave., New York 17, N. Y. *Phone*: Murray Hill 6-5363

Dies Tried with Safety

A 300 ton, mechanical die tryout press features a slide that rotates up to 270 degrees from its normal position. This permits the diemaker full accessibility with complete safety.

Less than a minute is required to return the slide and upper half of the die to the running position. The die can then be tried and a production run made in the same machine.

Dies can be loaded into the press with an overhead crane. Presses are the bottom drive type, but do

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STAINLESS STRIP STEELS

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- STRATA design by SHEFFIELD Silver Company New York, New York

Stainless—without care! Modern hollow ware of Superior Stainless Steel has the sheen of precious metal without penalty of upkeep . . . strength to resist dents and scratches in service . . . and "willingness" in fabrication that permits free range in design and manufacturing methods. For full details on Superior Stainless grades, sizes and tempers fitting your applications, address our Sales Department.

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DIVISION OF

COPPERWELD STEEL COMPANY

CARNEGIE, PENNSYLVANIA

For Export: Copperweld Steel International Company, New York

A Review of the Phosphate Coatings

Specified for the Protection of Metal Surfaces

By HUGH GEHMAN, Assistant Manager, Product Development Dept., AMCHEM PRODUCTS, INC.

Phosphate coatings are protective inorganic finishes that actually change the chemical nature of metal surfaces. The metal reacts with the applied phosphate solution to form a nonmetallic, crystalline coating which serves to:

- **Improve paint adhesion**
- **Provide protection against corrosion**
- **Increase lubricity of friction surfaces**
- **Facilitate mechanical deformation of metals**
- **Decorate—in many instances**

Satisfactory protection of steel, zinc and aluminum surfaces against corrosion, paint peeling and blistering, and hard wear requires precision methods of chemical conversion coating.

Types of Conversion Coatings

There are seven classes of chemical conversion coatings commonly specified and used throughout industry today. They are as follows:

Zinc-iron phosphate (ACP Granodine®). This is the heaviest type of coating (gray in color) used for prepaint treatments on steel, iron and zinc surfaces. The process requires five or six operations: cleaning; rinsing; rust removal, if necessary; coating; rinsing; and a second rinse. Coating weight ranges from 100 to 600 mg per sq. ft.

Medium or large volume production of automobile bodies, appliances, projectiles and cabinets can be handled effectively.

The coating solution improves paint adhesion by forming a crystalline deposit over the metal surface. This deposit is rough, as revealed microscopically, and so offers an ideal gripping surface for paint particles.

Manganese-iron phosphate (ACP Thermoil-Granodine®). This is a heavy black coating used on friction surfaces to prevent galling, scoring and seizing of parts. Typical metal parts treated are pistons, piston rings, gears, cylinder liners, camshafts, tappets and various small arms components.

Iron phosphate (ACP Duridine®). This is a comparatively new process that places a light coating on surfaces for improved paint adhesion. Since cleaning and coating occur in the same bath, it has only three to five stages.

The iron phosphate treatment is a spray process suited for medium to large volume, large or small work. Precleaning is normally unnecessary, an economy factor in its favor.

Products protected by this process are steel or iron fabricated units, such as cabinets, washing machines and refrigerators. Weight of coating is 50 to 100 mg per sq. ft.

Zinc phosphate (ACP Lithoform®). This is a crystalline coating produced on galvanized iron and other zinc surfaces—also cadmium—for improving paint adhesion. The purpose of the coating is to provide a paint-gripping surface and to prevent the reaction between acidic components of the paint and the zinc metal, with the formation of soaps and loss of paint adhesion.

This coating is applied in weights of 75 to 500 mg per sq. ft. There are no limitations on volume or production or on size of products treated. Zinc phosphate coating is used on zinc alloy die castings, zinc or cadmium plated sheet or components, hot dip galvanized stock, and Galvanneal.

Amorphous phosphate (ACP Alodine®). This is a relatively new protective coating for aluminum and aluminum alloys. It may be used in place of anodic deposition for improved paint adhesion and corrosion resistance.

This coating is practical for production in any volume. Coating weight is 100 to 600 mg per sq. ft. Products treated include helmets, belt buckles, aircraft and aircraft parts, bazookas and rocket motors, roofing and siding. Particularly good when aluminum is painted prior to forming.

Zinc-iron phosphate for oil absorption (ACP Permadine®). This is a relatively heavy coating adapted to the retention of rust-inhibiting drying or nondrying oils and waxes on ferrous metal surfaces. The coating is applied to a weight of 1000 to 4000 mg per sq. ft.

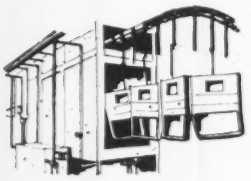
The process is satisfactory for large or small work in any volume—nuts, bolts, hardware, guns, tools, etc.

Zinc-iron phosphate for metal forming (ACP Granodraw®). This is a specialized coating used in conjunction with a suitable lubricant to facilitate the cold mechanical deformation of steel. The coating acts as an anchor for the lubricant throughout drawing, extrusion, and cold forming operations.

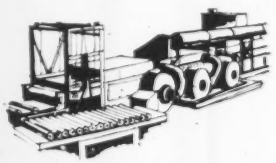
It is a successful treatment for products such as blanks and shells for cold forming, heavy stampings, impact extruded shapes, drawn wire and tube.

For more complete information about any one or all of these chemical conversion coatings, contact an ACP sales representative or write us at Ambler, Pa.

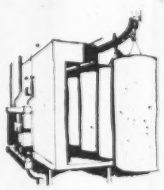
Typical Installations of Phosphate Coating Systems



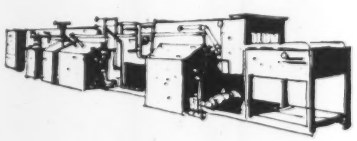
Customer: Truck manufacturer
Problem: Preparing cab parts for painting
Cycle: Phosphate wash; phosphate wash; rinse; chromic acid rinse; dry



Customer: Aluminum screen manufacturer
Problem: Final finish of aluminum shade screen
Cycle: Wash; rinse; phosphate coat; rinse; chromic acid rinse; dry



Customer: Water heater manufacturer
Problem: Preparation of water heater shells for synthetic enameling
Cycle: Phosphate wash; rinse; chromic acid rinse; dry



Customer: Hardware manufacturer
Problem: Preparing hardware parts for painting
Cycle: Wash; rinse; phosphate coat; rinse; chromic acid rinse; dry

Amchem Products, Inc.
Ambler 19, Pa.

CHEMICALS ACP PROCESSES

Formerly
AMERICAN CHEMICAL PAINT COMPANY
DETROIT, MICH. • ST. JOSEPH, MO.
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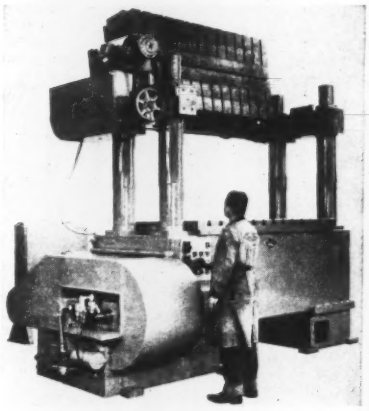
New Chemical Horizons for Industry and Agriculture



not require a pit. *Write*: Alpha Press & Machine Inc., 9281 Freeland Ave., Detroit 28, Mich. *Phone*: Webster 3-8505

Heating Unit Portable

The Reslec controlled electric heating supply unit (it's portable) provides selection from 10 to 90 per cent of rated transformer output—in infinitely variable stages.

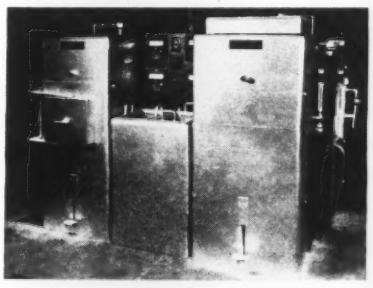
The unit can be used to heat work for forging, heading, hot punch presswork, heat treating, and continuous warm forming and annealing.

It will heat billets or blanks full length or ends. An entire sheet can be handled for stretch forming. *Write*: Herscott Co., 2500 N. Main St., Rockford, Ill. *Phone*: 5-7915

Furnaces Improved

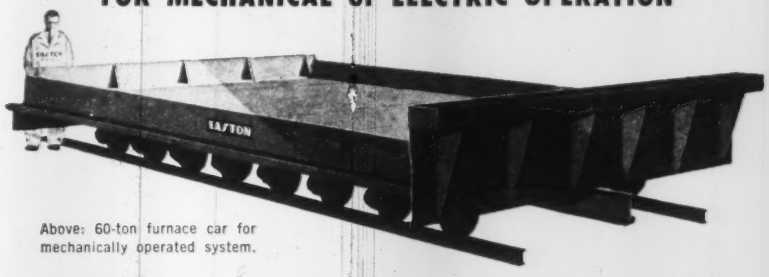
A three-unit setup has been provided for heat treating of small tools. A wide temperature range and accurate controls permit handling all types of high speed steel —including the cobalt type.

The unit setup includes a preheat furnace, a drawing furnace, an at-



Furnace Cars

FOR MECHANICAL or ELECTRIC OPERATION



Above: 60-ton furnace car for mechanically operated system.

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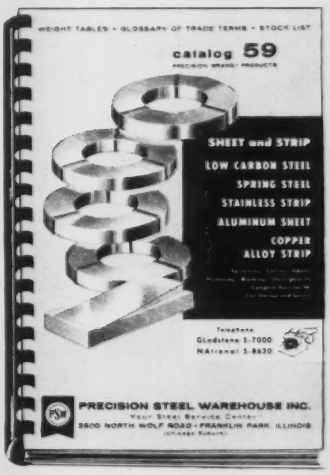

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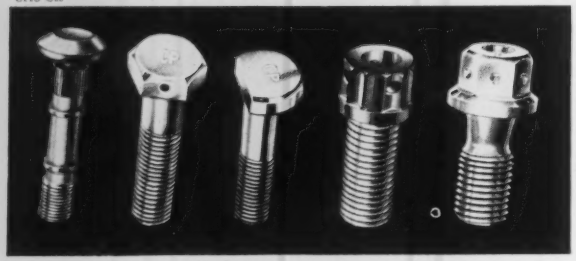

Send today for catalog and "Aircraft Bolt Stock List"

NEW PRODUCTS and equipment

mosphere generator, and two quench tanks. The units may be purchased separately, and they can be positioned to suit the area available.

The furnace doors are air operated. *Write*: Dept. J, Waltz Furnace Co., 1901 Symmes St., Cincinnati 6, Ohio. *Phone*: Capitol 1-2444

Tractors Improved

This standard SX-24 electric tractor has speeds of 6¼ mph empty and 3¼ mph with maximum rolling load. Ultimate drawbar pull is 550 lb. Smooth acceleration is assured by an adjustable time delay mechanism through four speeds

forward and reverse. Power is furnished by a high torque motor and a 24-volt battery.

The tractors are available with Radox radio remote control or Guide-O-Matic (electronic guidance system that needs no operator to steer it along a predetermined route). *Write*: Barrett Cravens Co., 628 Dundee Rd., Northbrook, Ill. *Phone*: Crestwood 2 2300

Instrument Detects Cracks

An eddy current instrument, the Magnatest ED-500, locates and determines the relative seriousness of defects in all conductive materials.

It can sort mixed lots of ferrous and nonferrous metals for differences in hardness, alloy, and heat treatment condition. It also measures the thickness of certain conductive and nonconductive coatings on conductive bases.

A "lift-off" adjustment provides stability of operation for testing semirough surfaces. *Write*: Magnaflux Corp., 7300 W. Lawrence

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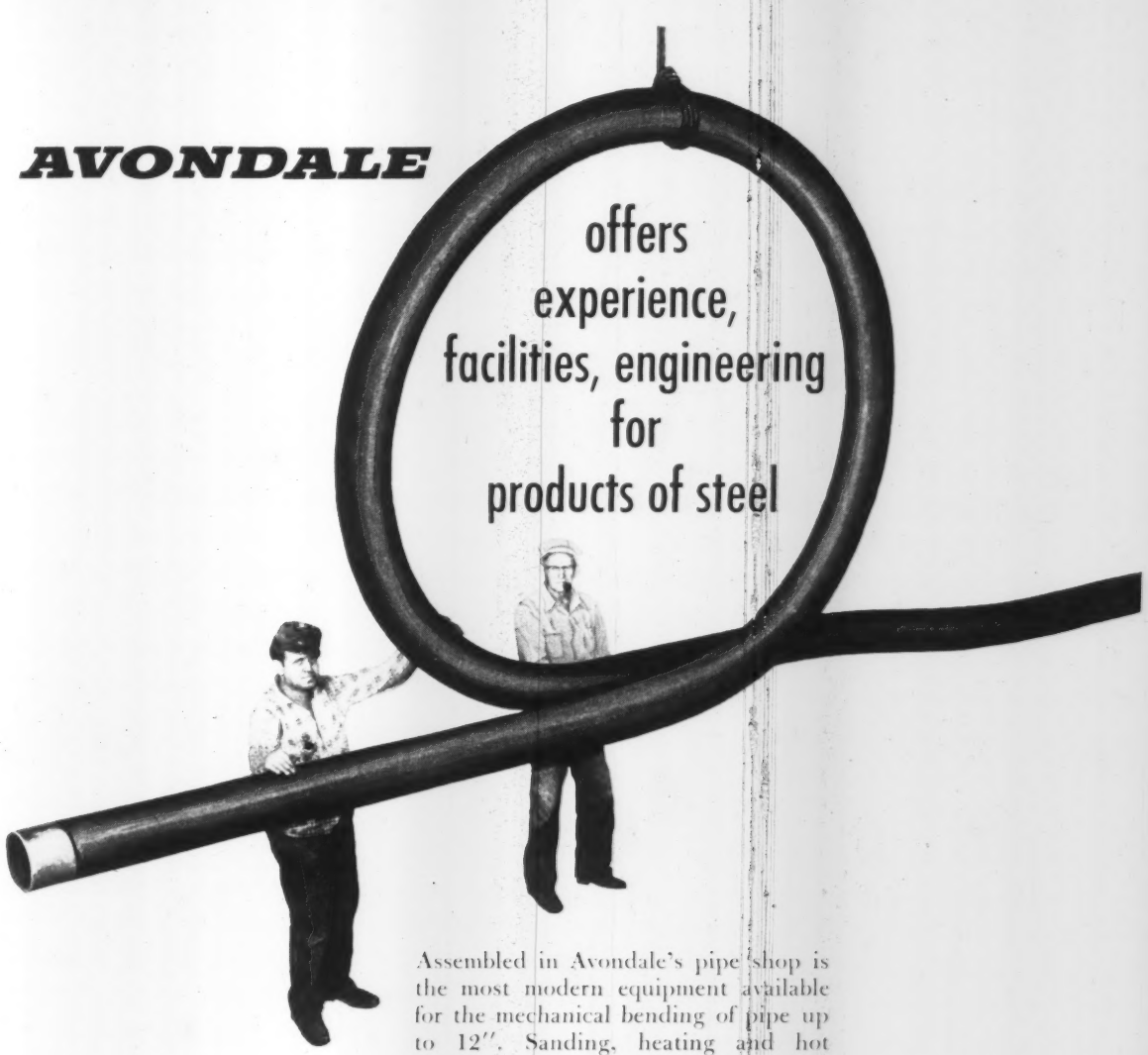
offers experience, facilities, engineering for products of steel



Assembled in Avondale's pipe shop is the most modern equipment available for the mechanical bending of pipe up to 12". Sanding, heating and hot bending apparatus permits pipe bending which exceeds the normal machine range. Avondale can supply your pipe requirements from the tooling of a simple thread to manufacturing an entire system— *efficiently, economically and fast!*

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Don't throw away those epoxy-coated rejects

Here's a new paint stripper that will save them

Do you scrap perfect metal parts that have been imperfectly coated with epoxies, vinyls, polyesters and other hard-to-strip paints or lacquers?

In the last few months, users of Oakite Stripper S-A have eliminated many such losses. Here's what some of them say about it:

CALIFORNIA: An aircraft manufacturer tested many strippers on an epoxy designed to resist attack by hydraulic fluid. Finally found that Oakite Stripper S-A is "the only one that safely strips this paint from anodized aluminum."

NEW YORK: A camera maker coats flash bulb reflectors with black vinyl paint outside and aluminum paint inside. "Stripper S-A is the fastest ever used on our rejects."

OHIO: A maker of toy pistols had trouble stripping alternate coats of lacquer and metallized aluminum. Now "Stripper S-A does it amazingly fast and remetallizing is completely satisfactory."

CALIFORNIA: A producer of metal furniture uses Stripper S-A to remove clear epoxy from plated parts. Chemist says "This is the best stripper on the market."

ALABAMA: A hardware maker had trouble stripping lacquer from brass door knobs. Oakite Stripper S-A now does the work in "less than ⅓ the time taken by any other stripper."

NEW YORK: A manufacturer of business machines tested several strippers on various finishes on steel and aluminum. Verdict in favor of Stripper S-A was: "It's doing a wonderful job."

CONNECTICUT: A maker of brass lipstick shells has found that "Stripper S-A quickly strips epoxy lacquers from rejects and heavily coated work spindles."

CALIFORNIA: A missile maker reports that "Stripper S-A is doing a fine job stripping vinyl from stainless steel and titanium."

FREE Write Oakite Products, Inc., 34E Rector St., New York 6, N. Y., for complete information on Oakite Stripper S-A.

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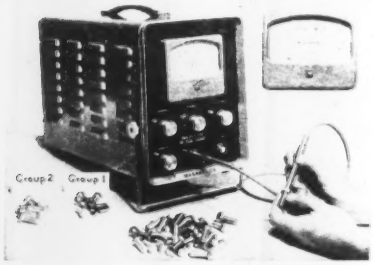


Ave., Chicago 31, Ill. *Phone*: Underhill 7-8000

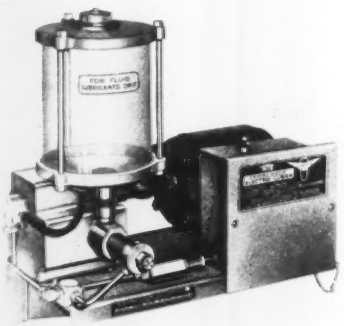
Unit Signals Warning

A low-cost device gives positive indication of motion or lack of it in machinery.

The Roto-Guard converts motion into a signal that can be used to energize an alarm system to warn operating personnel or to activate control switches. *Write*: Bin-Dicator Co., 13946-177 Kercheval Ave., Detroit 15, Mich. *Phone*: Valley 2-6952

Lube System Automatic

Fully automatic and electrically operated Electro-Luber systems pro-



vide centralized power lubrication (high or low pressure) for all industrial machinery.

Compact, they supply oil or grease to banks of injectors.

Units may be obtained for service on individual machines. *Write*: Lincoln Engineering Co., 5702-33 Natural Bridge Ave., St. Louis 20, Mo. *Phone*: Evergreen 3-5900

Lubricates Automatically

An intermittent, multizone system provides measured amounts of

(*Please turn to Page* 210)

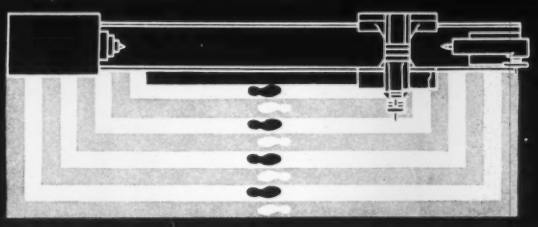
Lodge & Shipley POWERSHIFT PRESELECTOR GIVES PRODUCTION PLUS

- **TIME SAVING** . . . by eliminating "compromise speed setting" which can waste up to 50% of machining time.
- **INCREASED TOOL LIFE** . . . by using proper cutting speed. You save both tool time and money.
- **FINER FINISH** . . . with the right cut speed greatly reduces grinding required.
- **DECREASED EFFORT & ERROR** . . . preselection of cutting speeds offers another saving in operator time and effort.
- **PROVISION FOR THE FUTURE** . . . POWERSHIFT can be adapted for electronic programming or magnetic tape control.

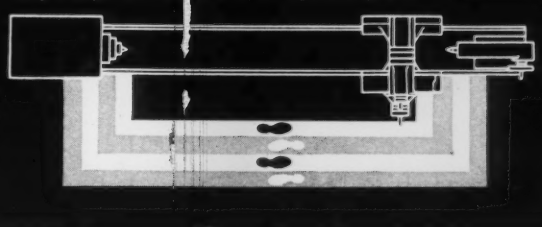
A SINGLE DIAL . . . COMPUTES! REMEMBERS! SHIFTS! You merely rotate cut speed dial to desired speed (dial computes speed if desired) . . . then, when preset speed is needed, shift to it immediately at the apron! One speed can be preset; up to six others "programmed" with handy indicator tabs. A Lodge & Shipley representative will be glad to explain fully. You'll find his name in the telephone yellow pages. Or, for detailed literature, write: **THE LODGE & SHIPLEY CO., 3070 COLERAIN AVE., CINCINNATI 25, OHIO**

With a long bed lathe and a job requiring 4 speed changes, an OPERATOR CAN SAVE ALMOST 50% OF HIS "HIKING TIME"

CONVENTIONAL HEADSTOCK . . .
4 trips to headstock . . . 4 to apron



POWERSHIFT PRESELECTOR . . .
only 2 trips to headstock . . . only 2 to apron!



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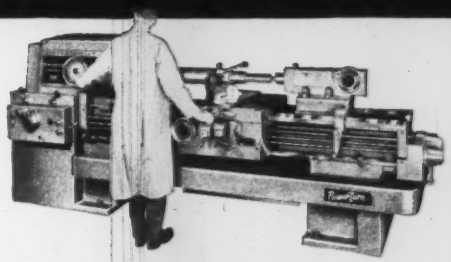


LOOKING FOR MORE FROM

Trim steelcutting costs with Carboloy® Extra-Performance Grades 330, 350, and 370, and low-cost, General-Purpose Grades 78 and 78B

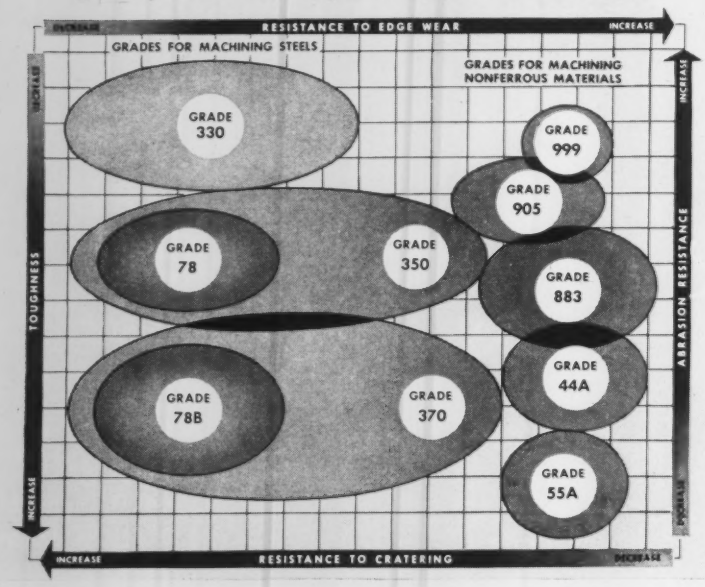
Some steelcutting jobs call for extra-tough, extra-performance carbides. Others can only be handled profitably with low-cost, general-purpose carbides. That's why we make them *both*.

Where you need increased machine productivity and have long production runs, to keep cost-per-piece low use Carboloy Extra-Performance Series 300 carbides. Their added strength and stamina handle jobs ranging from heavy roughing to high-speed finishing . . . at a cost and rate no "premium" carbide on the market can beat.

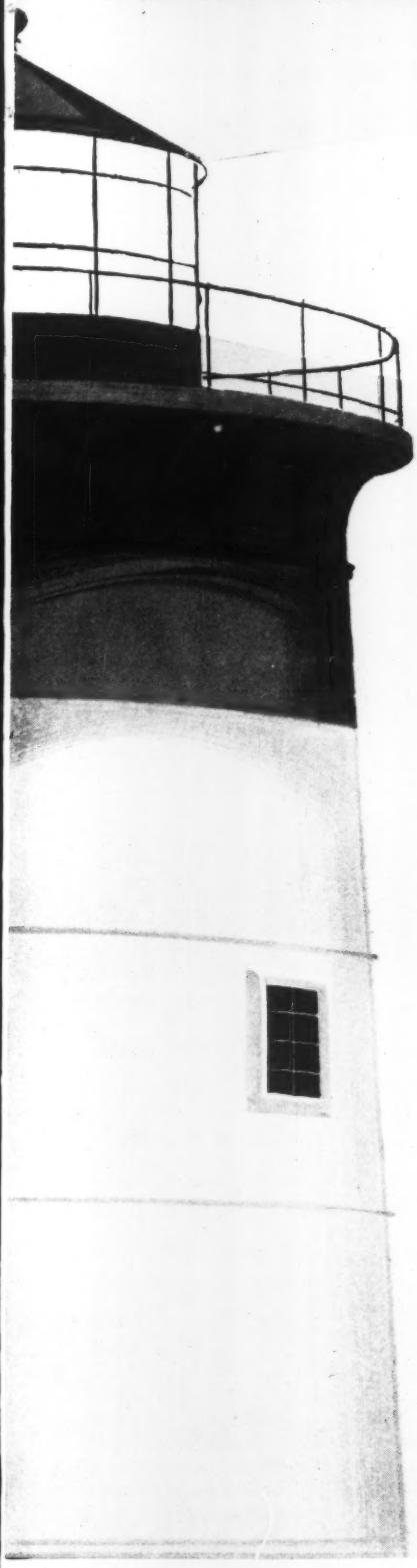
But, for general-purpose steelcutting jobs that don't require the Extra-Performance carbides, use Carboloy Grades 78 and 78B. Their top-notch performance, at low initial tool cost, will keep your machines operating profitably.

Chances are, your plant should be using *both* grades. Your local Authorized Distributor of Carboloy cemented carbides can deliver tools, blanks and inserts you need . . . in a hurry.

This complete team of Carboloy cemented carbides gives you more for your carbide tool dollar!



YOUR CARBIDE TOOL DOLLAR?



Cut nonferrous materials with low-cost Carboloy® Grades 44A and 883 . . . get longer tool life, increase production rates

These Carboloy cemented carbides are performance-matched to your cutting job for optimum machine productivity.

For interrupted cuts and tough production runs, use Carboloy Grade 44A. High shock resistance and good wear resistance make this a versatile grade for all machining jobs where a rugged carbide is needed.

When your job demands a carbide with built-in stamina and high wear resistance for general-purpose machining of nonferrous materials, use Carboloy Grade 883. You will get longer tool life and lowest cost-per-piece.

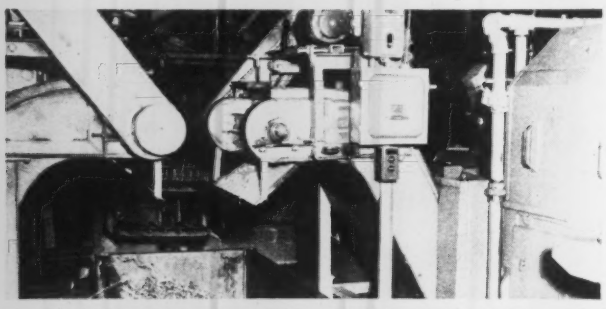
There are 5 Carboloy cemented carbides for cutting nonferrous materials, including Grades 44A and 883. One of these is designed especially for the particular characteristics of your cutting job to give maximum tool efficiency. Job-matched performance of these Carboloy nonferrous grades means better value for your cutting dollar.

To find out more about Carboloy Extra-Performance and General-Purpose carbides, or low-cost nonferrous grades, call or write: Metallurgical Products Department of General Electric Company, 11157 E. 8 Mile Boulevard, Detroit 32, Michigan.

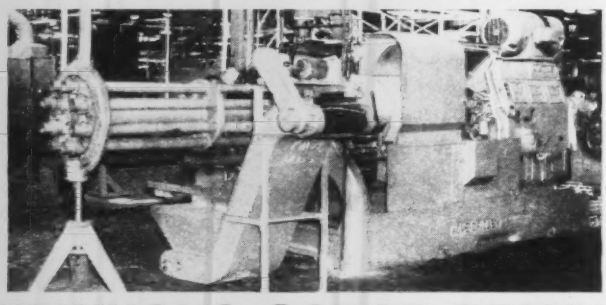
CARBOLOY®
CEMENTED CARBIDES

GENERAL ELECTRIC

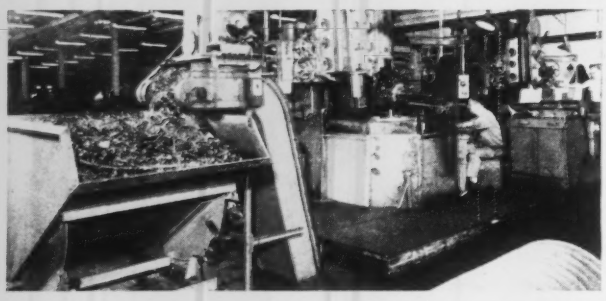
MAY-FRAN CHIP-TOTES



PROVIDE AUTOMATIC AND

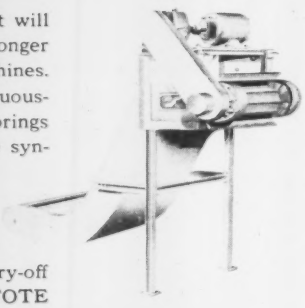


CONTINUOUS SCRAP REMOVAL



FROM ALMOST EVERY TYPE AND SIZE OF MACHINE TOOL

Here is a machine tool accessory that will cut production costs, and permit longer "run" times for your automatic machines. The MAY-FRAN CHIP-TOTE continuously removes the chips, turnings and borings from machines. The conveyor can be synchronized with the metal removing capacity of the machine. Scrap is channeled onto the CHIP-TOTE belt, carried clear of the machine for discharge into tote box or carry-off conveyor system. There is a CHIP-TOTE for every machine tool.



MAY-FRAN ENGINEERING, INC.

1725 Clarkstone Road, Cleveland 12, Ohio

For complete facts, write today and ask for MF-640.

NEW PRODUCTS and equipment

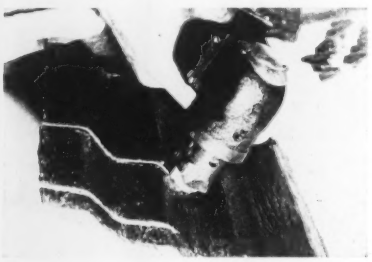
lubricants to a large number of bearings over a wide area at the precise time needed. It operates from one or more central stations.

It is ideal for steel mills, sintering plants, and other applications where bearings are far apart and proper lubrication is a problem.

A single indication shows that bearings have been serviced. *Write:* Trabon Engineering Corp., 28820 Aurora Rd., Solon, Ohio. *Phone:* Churchill 8-6151

Cuts Coated Metals

The Fenway nibbler will cut all types of corrugated metals. It will



handle materials with any kind of asbestos or pitch coating without clogging.

This portable tool leaves a finished, smooth edge.

The cut pieces drop away from the nibbler instead of being hurled or flipped at a tangent.

It is made in air powered and electric models. *Write:* Fenway Machine Co., Edgemont and Clementine Streets, Philadelphia, Pa. *Phone:* Regent 9-1150

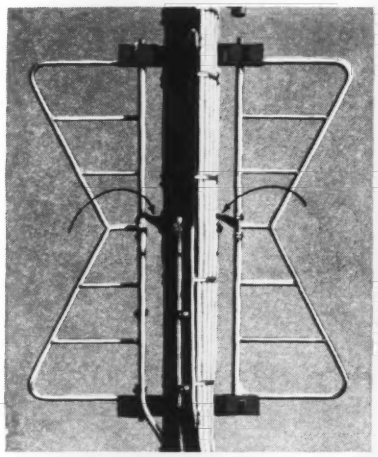
Heads Ups Milling Range

A self-contained, heavy duty, vertical head is available as an optional accessory for the Quartet milling machine. The 3-hp quill-type head increases the range of the machine, which is adaptable to horizontal, vertical, angular, and universal milling.

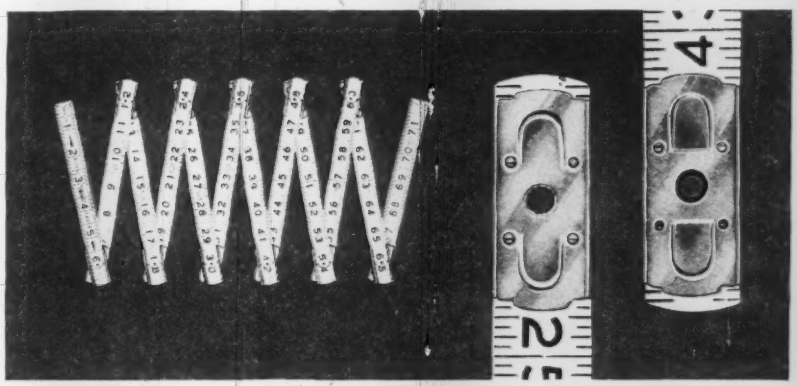
The head has a triple row of preloaded, angular contact, high precision ball bearings mounted at the lower end of the spindle. The quill is hard chrome plated. Spindle speeds are infinitely variable from 80 to 4200 rpm with an optional

TRY A FRESH APPROACH

Don't just take your metals for granted—specify the properties you need. The Man from Anaconda may come up with some very interesting answers.

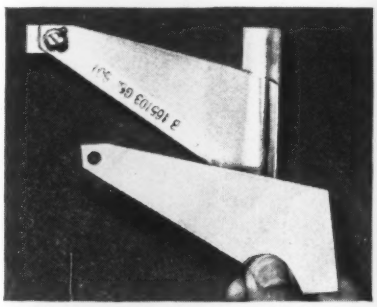


Up where TV broadcast antennas stand, normal wind causes flexing of metals. So jumpers between coaxial cables and radiators must be resilient – beside being conductors, giving some structural support. Ordinary phosphor bronze seemed adequate, but there were fatigue failures.

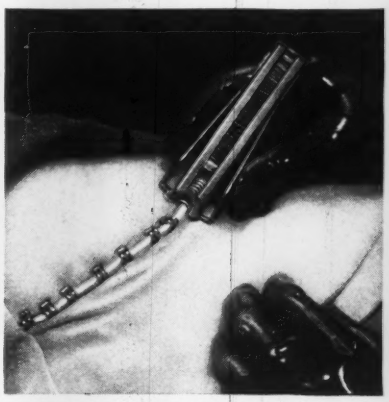


To stimulate sales of its top-quality folding rule, and to meet Navy specifications, Eagle Rule Mfg. Corporation sought a metal for rule joints that would resist wear and corrosion, and provide the proper spring tension. Phosphor bronze, which had these qualities in excess of needs, cost too much.

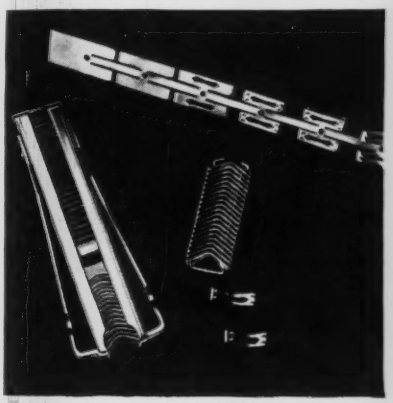
American Brass suggested three alloys. Eagle Rule chose Ambronze-420 (88 Cu, 11 Zn, 1 Sn) because rule joints of this alloy met all requirements, withstood 400,000 cycles in wear test (Navy required 7000). It cost only pennies per pound more than yellow brass, much less than phosphor bronze.



RCA listed desirable properties of phosphor bronze – added *extra*-high endurance, *extra*-long fatigue life. American Brass suggested Duraflex®, Anaconda superfine-grain phosphor bronze. RCA tried it, found it the answer—at no extra cost—specified Duraflex to the manufacturer, Dielectric Products Engineering Co., Inc., Raymond, Maine.



Technical Oil Tool Corp. asked Anaconda to help select the metal for a new magazine-type clip used to close surgical incisions. The metal had to provide the right tension to hold edges together, yet open easily—form readily, hold sharp die-cut edges, be proved in surgical use.



American Brass technical specialists suggested Nickel Silver, 18%-719 as best suited to meet all requirements. Auto-Clip, shown in use above, is the result. Incisions are held together with least damage to tissues. Surgeons can work faster in applying and removing clips.

STARTING with 93 standard alloys, The American Brass Company can make minor variations in composition, fabrication, and annealing to provide an almost unlimited number of combinations of useful properties. When new or unusual problems arise, ask for the help of the Technical Dept. in selecting the right metal. For such help or a copy of Publication B-32, "Anaconda Copper & Copper Alloys," write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario, Canada.

5850

ANACONDA®

COPPER • BRASS • BRONZE • NICKEL SILVER
MILL PRODUCTS
Made by The American Brass Company

WIRE

BACKED BY A HALF CENTURY OF EXPERIENCE

- **Sizes up to 9/16"...**

  . . . down to almost the size of a human hair, in low carbon and medium low carbon steels.

- **Wire of many finishes**

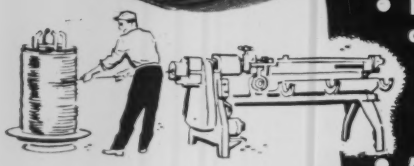
  the right wire for the job—coppered, tinned, bright, galvanized and other finishes to fit your production needs.

- **Better forming and workability**

  Continental Wire is available in almost any temper and analysis in low and medium low carbon steels for your particular forming jobs.

- **Metallurgical service**

  Thousands of case histories provide unsurpassed resources for developing a practical solution to your wire problems.



ECONO-COIL—Reduces scrap loss up to 90 percent. Saves material handling time. The Econo-Coil gives you continuous length wire coils of 2000# to 3000# catchweight, in sizes from 12 gage through ½" diameter. Shipped on returnable Econo-Coil reels.

LEVERPAK—Mechanizes your wire handling, protects wire against moisture, dirt and handling damage. LEVERPAK permits long uninterrupted runs of 500# to 650#, depending on wire sizes. Saves scrap, downtime, stores easily.

SPECIAL SHAPES—D-shaped, V-shaped, oval, half-oval, half-round, square, rectangular, triangular, keystone-shaped and others. Saves fabricating and machining costs.

Chances are you have a problem right now that we can help you solve—with Wire. Call us.

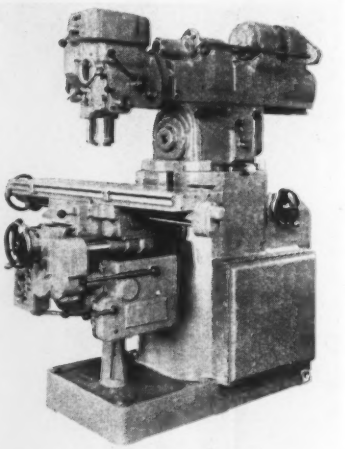
CONTINENTAL

STEEL CORPORATION • KOKOMO, INDIANA

Wire Specialists for over Half a Century

PRODUCERS OF Manufacturer's Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and special shaped wire. Also Welded Wire Reinforcing Fabric, Nails, Continental Chain Link Fence, and other products.

NEW PRODUCTS and equipment



40 to 2100 rpm. It is equipped with a built-in tachometer. *Write*: U. S.-Burke Machine Tool Div., Cincinnati Mfg. Corp., Brotherton Road, Cincinnati 27, Ohio. *Phone*: Bramble 1-5000

Unit Straps Automatically

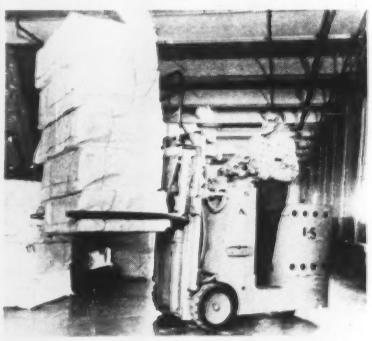
An automatic steel strapping machine, the F1J, applies uniform, predetermined tension to a wide range of package sizes.

As a package moves into the machine on a power conveyor, the size is sensed and the proper strapping pattern selected and actuated.

The unit is easily integrated into existing conveyor systems. *Write*: Acme Steel Co., 135th Street and Perry Avenue, Chicago 27, Ill. *Phone*: Interocean 8-9500

Handles Variety of Loads

Palletized and nonpalletized loads, as well as those on skids and in bins, can be handled easily with the Master Universal Clamp. This multipurpose attachment is



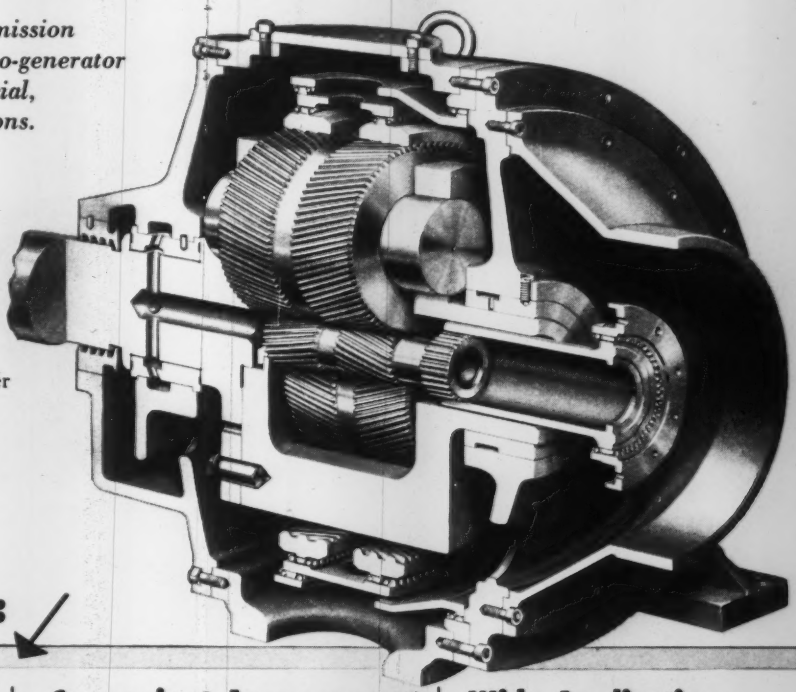
DE LAVAL-STOECKICHT
PLANETARY GEAR

...for high speeds...high horsepower

Proved in hundreds of installations abroad totalling over 3,000,000 horsepower—now available in America!

For all high torque power transmission applications such as pump turbo-generator and compressor drives in industrial, municipal and marine installations.

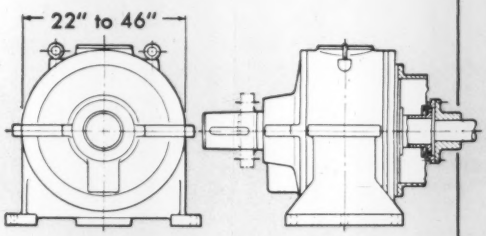
This cutaway view of the De Laval-Stoeckicht Planetary Gear shows how it provides flexibility for proper load distribution throughout the gear members. The thoroughly proved and tested design is completely reliable in transmitting high horsepower for high speed applications. • Highest efficiencies (98% or higher)... no high speed bearings... less friction losses.



Check These Advantages:

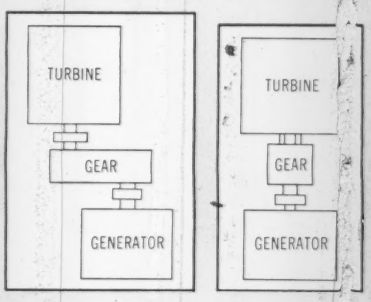
Small Size—Light Weight

Compact—low weight per hp. Sizes range from 22" to 46" in diameter, depending on horsepower requirements. Example: 5000 hp planetary unit weighs 1700 lbs. against 6000 lbs. for conventional gear.



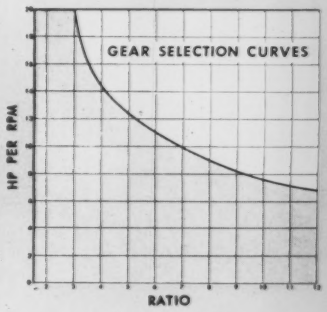
Convenient Arrangement

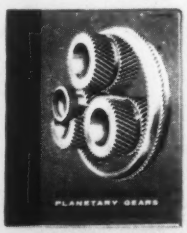
Co-axial or "in-line" arrangement of gear members takes up far less space than parallel axis gears of equivalent horsepower rating.



Wide Application

Capacity range shown in shaded area on chart below. For other applications, contact your De Laval Sales Engineer.





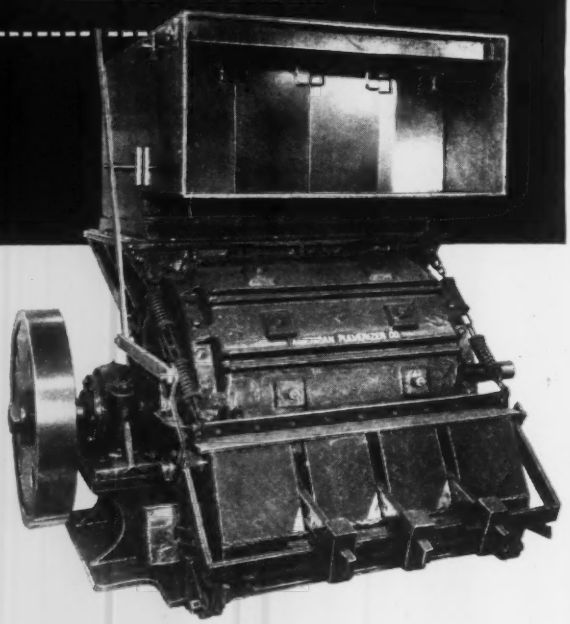
For further details, write for Bulletin 2400.

DE LAVAL *Steam Turbine Company*

860 Nottingham Way, Trenton 2, New Jersey

DL431

convert metal turnings into cash

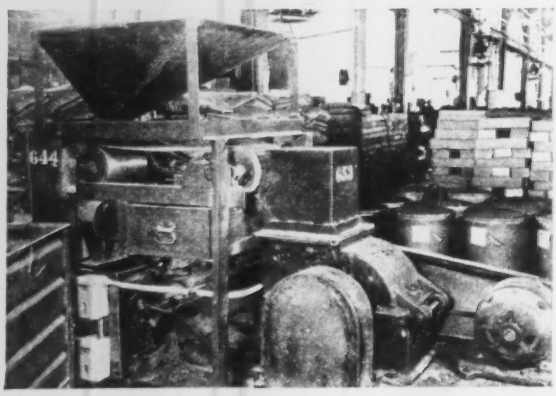


Long, curly, troublesome metal turnings, reduced in an American Metal Turnings Crusher, can produce additional profits for your plant.

Reduced to chip form, metal turnings bring $2 to $5 more per ton. Handling metal chips by shovel or pneumatic systems is easier, too, and chips require 75% less storage space than bulky machine turnings. You'll recover more cutting oil from chips . . . up to 50 gallons per ton! More important, American Metal Turnings Crushers pay for themselves and produce substantial profits for years to come. Models available with capacities ranging from 1 to 50 tons per hour. To get all the details, write American today.

reclaim fused welding flux

One industrial plant saved more than $10,000 a year by using an American Welding Flux Crusher to regranulate fused welding flux. Write American for details.



American PULVERIZER COMPANY

ORIGINATORS AND MANUFACTURERS OF RING CRUSHERS AND PULVERIZERS

1539 MACKLIND SAINT LOUIS 10, MISSOURI

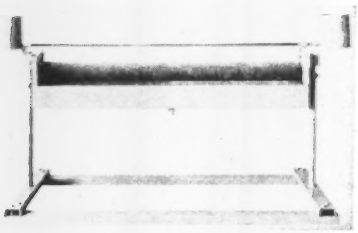
NEW PRODUCTS and equipment

available on all Lewis-Shepard electric fork lift trucks.

Because it clamps the sides of nonpalletized objects hydraulically, it is especially effective in handling bales or cases. The clamp has a range from 18 to 46 in. or 23 to 60 in. depending on materials handled. All controls are at the driving position. *Write*: Dept. R8-14, Lewis-Shepard Products Inc., 135 Walnut St., Watertown 72, Mass. *Phone*: Watertown 4-5400

Oiler Extends Die Life

Die life is lengthened by installing a heavy-duty strip stock oiler for quality metal stampings. The



Model C unit lubricates strip stock leading to a press at any required height.

It handles material in a wide range of sizes—from 26 to 7 gage, and widths up to 72 in. Rolls are ball-bearing mounted.

Excess oil drains into a reservoir for re-use. *Write*: Stamping Specialty Co. Inc., 2141 N. Sherman Dr., Indianapolis 18, Ind. *Phone*: Liberty 6-3002

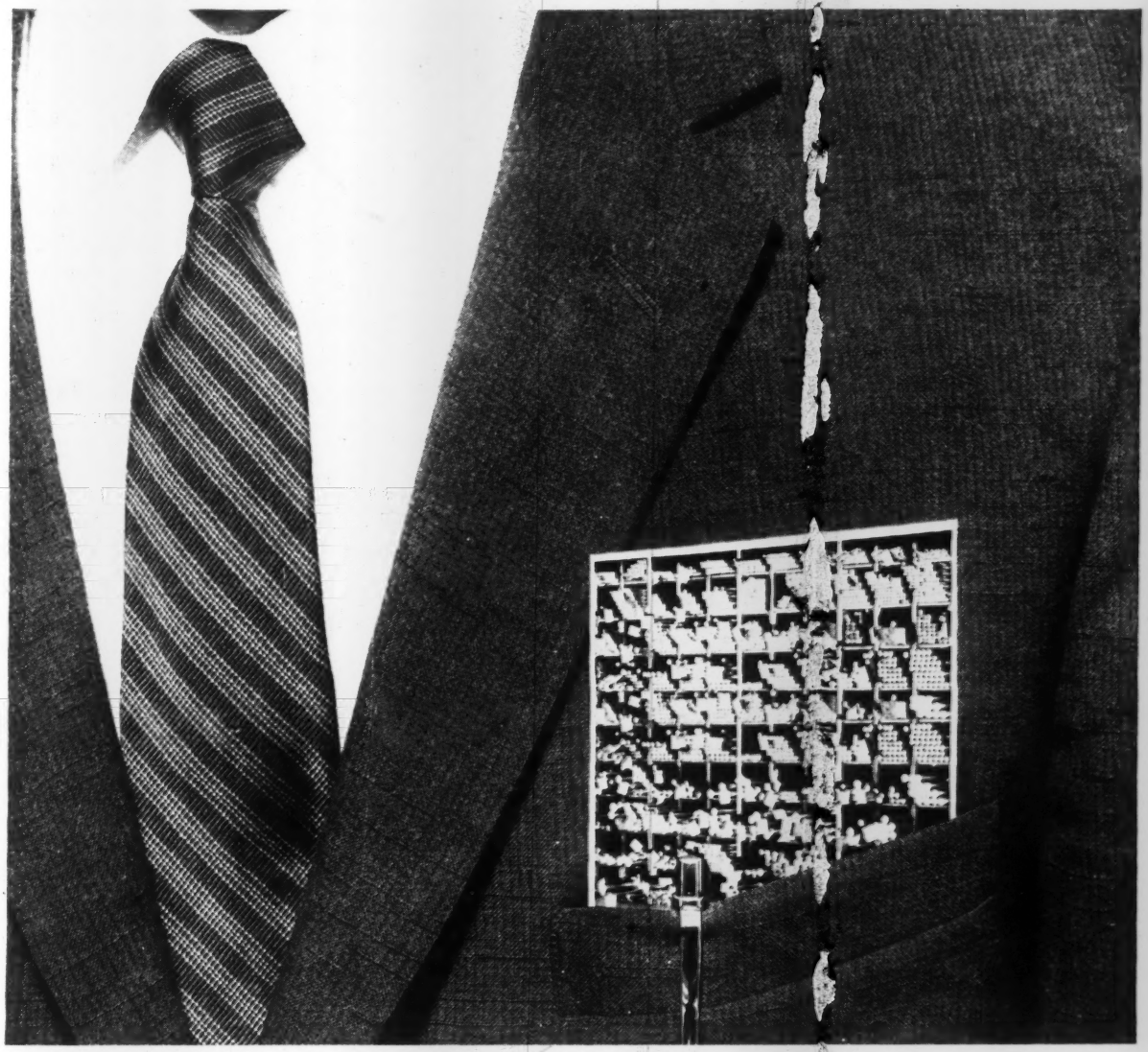
Steel Cleaner Is Dustless

A steel cleaner, Acid Activating Salt #1, is dustless, granular, and free flowing. Suggested uses: Conventional acid pickling operations. Chrome stripping bath at 200° F.

When removing oxide, it does not remove the metal. *Write*: Northwest Chemical Co., 9310 Roselawn, Detroit 4, Mich. *Phone*: Texas 4-2500

Unit Has High Versatility

The Model P-9 machine operates by means of a reciprocating upper tool and stationary lower one. This unit does straight, circular, inside,



it's like having a stainless steel warehouse in your pocket . . .

And it doesn't even take that much storage space. That's why so many plants are now saving money and labor by using the dependable stock racks of local Carpenter warehouses. There's a built-in bonus . . . it's Carpenter technical service, always on call with data and on-the-job help. The quality of Carpenter stainless has been speaking for itself for many years in thousands of plants. Your local Carpenter warehouse is the answer to inventory problems with stainless . . . call today. The Carpenter Steel Company, Reading, Pa.

Carpenter STEEL

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Baltimore, Md.
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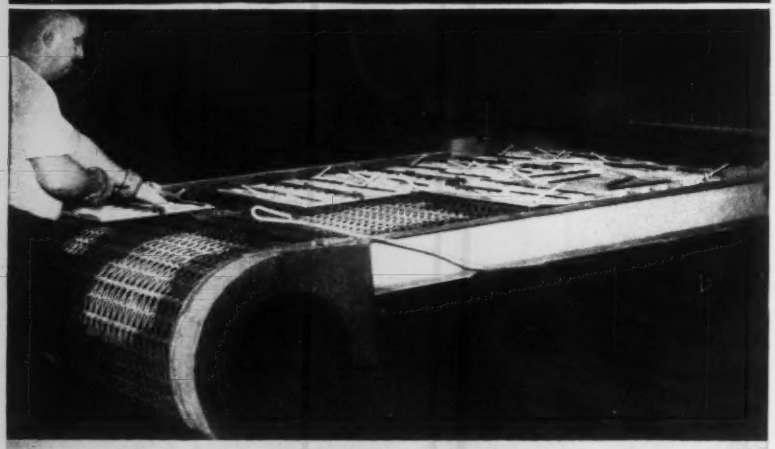
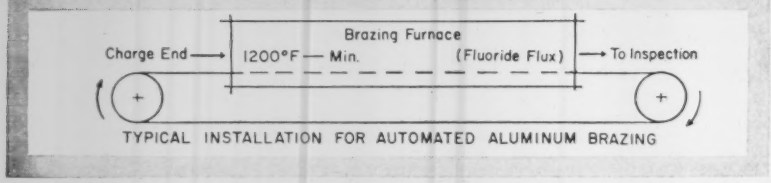
Cleveland, Ohio
Dayton, Ohio
Detroit, Mich.
Hartford, Conn.
Houston, Texas
Indianapolis, Ind.
Los Angeles, Calif.
Melrose Park, Ill.
(Chicago Area)
Milwaukee, Wis.
Mountainside, N. J.
Philadelphia, Pa.
Providence, R. I.
St. Louis, Mo.
San Francisco, Calif.
Toledo, Ohio
Woodside, L. I., N. Y.
Worcester, Mass.
York, Pa.

Cambridge WOVEN WIRE BELTS





TYPICAL INSTALLATION FOR AUTOMATED ALUMINUM BRAZING

METAL-MESH BELT CONTROLS PRODUCT UNIFORMITY IN CONTINUOUS BRAZING

Here's a belt that not only shrugs off hot atmospheres and corrosive fluxes, but helps produce uniformly brazed parts continuously —and in less time. Moving through the furnace at a controlled speed, the all-metal Cambridge Belt allows the atmosphere to circulate freely through its open mesh and around the product for fast, thorough treatment.

In heat treating, cleaning or quenching operations, too, Cambridge Belts help maintain capacity production and cut operating costs. Here's how:

CONTINUOUSLY MOVING BELTS ELIMINATE BATCH PROCESSING—give faster, more economical production; reduce manual handling.

ALL-METAL CONSTRUCTION IS HEATPROOF, COLDPROOF, ACIDPROOF—Cambridge belts can be woven from any metal or alloy to take sub-zero or up to 2100° F. temperatures, yet remain impervious to corrosive atmospheres or solutions.

OPEN MESH PROVIDES FREE AIR, LIQUID CIRCULATION—gives more uniform processing of product; grit, sand, quench solutions drain through belt immediately.

SPECIAL SURFACE ATTACHMENTS AVAILABLE—raised edges or cross flights hold product on belt during movement.

Talk to your Cambridge Field Engineer soon—he'll explain the many advantages of continuous heat treating on Cambridge Woven Wire Belts. He'll recommend the belt size, mesh or weave—and the metal or alloy—best suited to your operations. You'll find his name in the classified phone book under "BELTING, MECHANICAL." Or, write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.

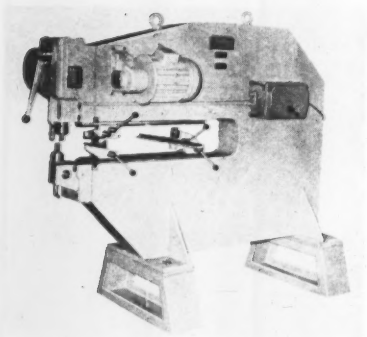
The Cambridge Wire Cloth Co.

WIRE CLOTH | METAL-MESH CONVEYOR BELTS | WIRE CLOTH FABRICATIONS

Department J, Cambridge 9, Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

NEW PRODUCTS and equipment



irregular, slot, and louver cutting. It also does joggling, flanging, edge-bending, dishing, and nibbling.

Eight models are available. Cutting capacities range from the lightest gages to 11/32 in. in mild steel. They also work stainless, nonferrous metals, and wire mesh. *Write:* American Pullmax Co. Inc., 2455 N. Sheffield Ave., Chicago 14, Ill. *Phone:* Diversey 8-5727

Coats Automatically

An automated straight line conversion coating machine is available for blackening, phosphating, bright dipping, precleaning, and pickling.

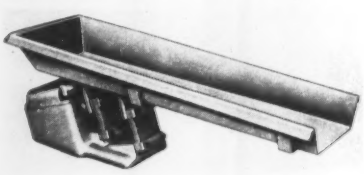
Convert-O-Matic provides maximum cycling flexibility (you set selective timers for each treatment tank). Once set up, the machine requires no labor.

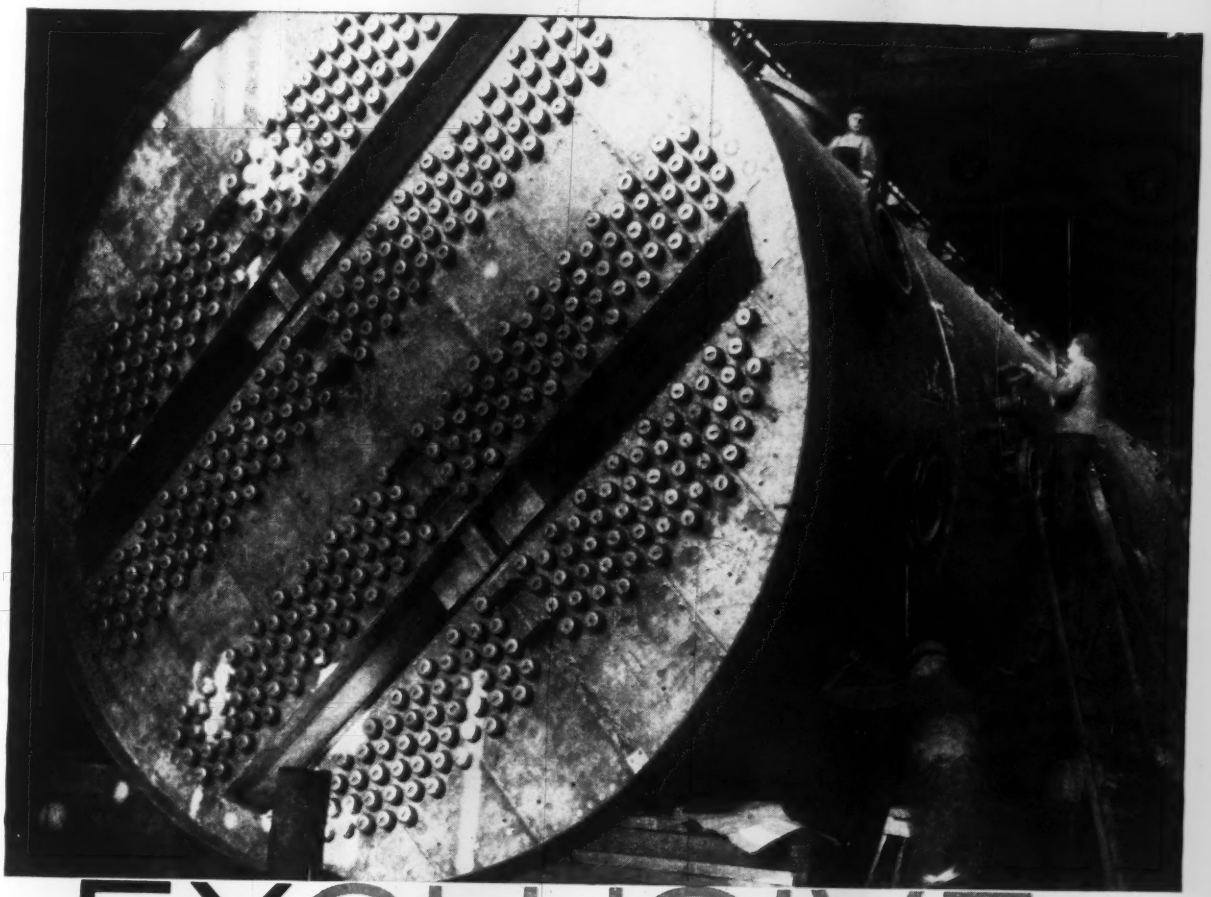
The unit is fitted with a barrel, but is adaptable to conveying baskets, tray loads, or bulky parts suspended from the carrier. *Write:* Hanson-Van Winkle-Munning Co., Church Street, Matawan, N. J. *Phone:* Matawan 1-1000

Feeds Bulk Materials

The Model F-010 electromagnetic, vibratory feeder offers fast, high capacity, rate controlled feeding of bulk materials and small parts in weighing, mixing, packaging, and similar processing.

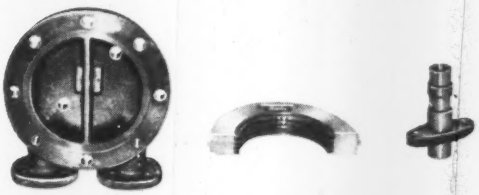
Its electromagnet drive produces 3600 vibrations a minute and as-





EXCLUSIVE...

At Sun Ship, STAINLESS STEEL is synonymous with EXCLUSIVE, because Stainless is never exposed to contamination by fabrication with ordinary carbon steel tools.



Working with the 300 to 400 series of alloys, clad steel, aluminum and other alloys, Sun fabricates pressure vessels, tanks, towers, troughs, autoclaves, reactors, hoppers, platework and machinery in all sizes and types. Each to exact specifications. Each with an additional quality feature... EXCLUSIVE.

SUN SHIP

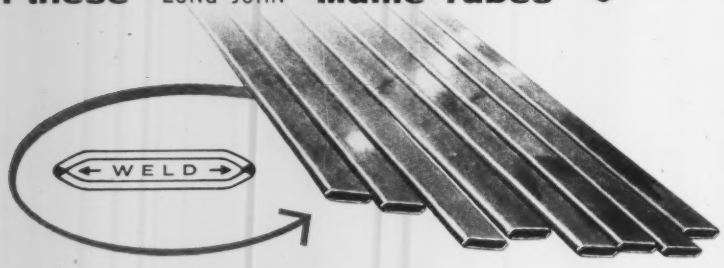
BUILDING & DRY DOCK CO.
CHESTER, PENNSYLVANIA

ROLOCK

FABRICATED HEAT AND CORROSION RESISTANT ALLOYS

there's more than meets the eye

in these "LONG JOHN" Muffle Tubes



Even Rolock's welded-fabrication experts consider these 32-foot Inconel muffle tubes an exacting test of skill. The inset sketch shows how they are made, and the dimensions . . . 32 feet long by only 5½ inches O.A. width and 1 inch inside height . . . leave little room for any inaccuracy. These muffles . . . used for continuous bright annealing of steel strip . . . just *have* to be straight and true when installed, and stay that way in service.

We produce these muffle tubes "by the dozen" for use by the steel strip mills in gas-fired furnaces. Upper and lower sections are assembled separately with diagonal joints welded inside and out. The full length sections are then edge-welded together. Tight specifications call for no weld-splatter on the inside, and each tube is pressure-tested to 25 lbs. p.s.i. before shipment. This is another example of Rolock service to key industries in building and designing many forms of special equipment that modern production processes call for.

If you have a problem in welded-fabrication of high heat and corrosion-resistant alloys, it will pay you to consult Rolock . . . the nationally recognized *specialists* in this field.

SALES & SERVICE FROM COAST TO COAST

ROLOCK INC., 1262 KINGS HIGHWAY, FAIRFIELD, CONNECTICUT

JOB-ENGINEERED for better work
Easier Operation, Lower Cost

9RL57

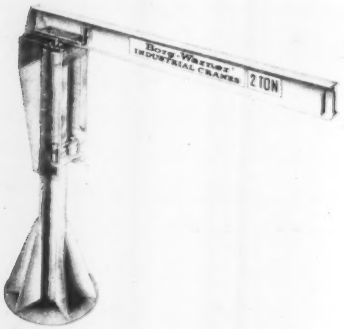
NEW PRODUCTS and equipment

sures free flow of hard to handle materials. A rheostat control gives adjustment of feed rates through continuously variable settings to a maximum of 3 tons an hour. *Write*: Syntron Co., 370 Lexington Ave., Homer City, Pa. *Phone*: 9-8011

Boom Swings 360 Degrees

The Jib Master is a self-supported unit which can be rotated through a full 360 degrees.

The side rollers are positioned



where stresses between stationary and revolving members of the crane are balanced and the bending moment of the column is at a minimum.

It is designed for use with a chain block or an electrical hoist and is available in capacities to 6 tons and boom lengths to 20 ft. *Write*: Borg-Warner Industrial Cranes, 1536 S. Paulina, Chicago 8, Ill. *Phone*: Monroe 6-1350

Straightens Rolls

These accurate roll straighteners are heavily constructed. The rolls range from 0.375 to 6 in. in diameter for materials ranging from 0.003 to 0.8 in. thick—including strip, sheets, plates, bars, and semi-finished and finished parts.

The smaller units are stocked for immediate delivery. *Write*: H. J. Ruesch Machine Co., 407 Mulberry St., Newark 2, N. J. *Phone*: Market 3-0759

Welder Reacts Quickly

The Aircomatic Fillerarc Welder is for the consumable electrode, gas shielded, welding processes.

This motor-generator unit applies

NEW PRODUCTS and equipment

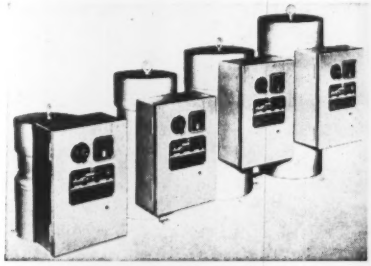
the gas shielded, metal arc method where equal burnoff rate and wire feed must be maintained. Its rising volt-ampere curve reacts instantaneously to all wire feed speed changes. This maintains constant arc length.

Current rating is 450 amperes, continuous. Weight is 840 lb. *Write*: Air Reduction Sales Co., division of Air Reduction Co. Inc., 150 E. 42nd St., New York 17, N. Y. *Phone*: Murray Hill 2-6700

Chargers Use Less Space

Vertical motor-generator chargers for electric industrial truck batteries save floor space. They can also be mounted off the floor.

To operate, the charging plug



is connected (polarized to prevent error) and the control pointer is set. The charging current begins automatically at the proper rate and is controlled constantly. When the battery is fully charged, the machine automatically stops. *Write*: Exide Industrial Div., Electric Storage Battery Co., Box 8109, Philadelphia 1, Pa. *Phone*: Locust 4-4030

Product Prevents Foam

These antifoaming agents are fast acting and effective for indus-

CAMPBELL HALL-MARK CHAIN

is identified 3 ways... for your permanent protection

1 BY MAKE . . .
The Campbell "C" is permanently in relief on every other link . . . your Campbell identification.

2 BY GRADE . . .
the grade mark (see below) is on every other link . . . your permanent grade identification.

3 BY 5′ INTERVALS . . .
Campbell "Measure-Mark" . . . color-coded every five feet for quick, exact measurement . . . saves time.

From now on when you specify any of the four grades of Campbell Chain listed below, you'll always know the make, grade and length of every piece of chain in your plant. The *grade* and *make*—your two most important safety gauges—are permanently recorded where you need them most . . . *right on the chain itself!* Contact your distributor or write direct for details.

CODE SPECIFICATIONS

GRADE	PERMANENT GRADE MARK	COLOR-CODE "MEASURE-MARK"
Proof Coil Chain	P	Green
BBB Chain	B	Red
High Test Steel	H	Blue
Cam-Alloy Chain	A	Orange

CAMPBELL CHAIN

CAMPBELL CHAIN Company

York, Pa.—W. Burlington, Iowa

E. Cambridge, Mass., Chicago, Ill., Portland, Ore., Seattle, Wash.

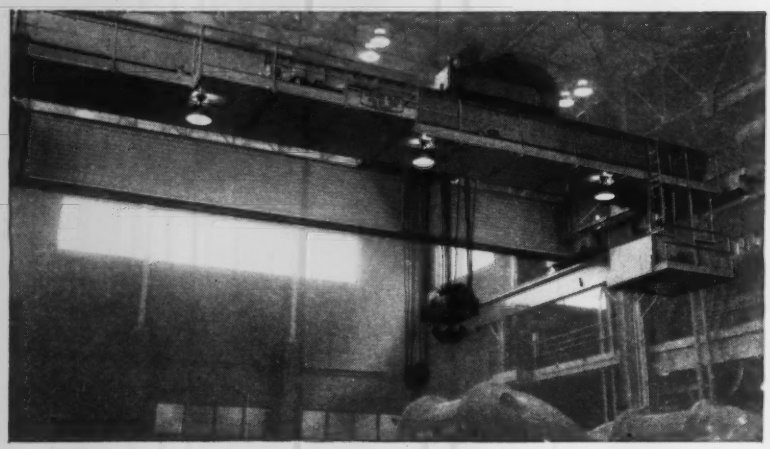
Los Angeles, Sacramento, San Francisco, Calif.

Makers of Jiffy *Lug-Reinforced* Tire Chains and Blue Temper pre-cut, packaged chain

SHEPARD NILES

LARGE INDUSTRIAL CRANES

LIFTING POWER 1 to 450 TONS

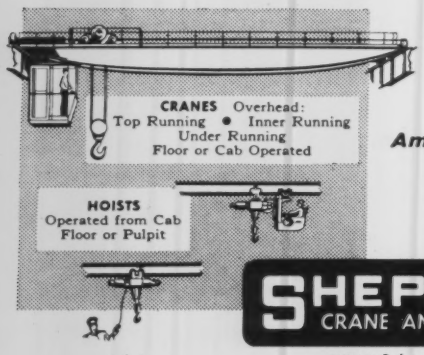


Shepard Niles places dependable lifting power at your fingertips . . . effortless power that now serves thousands of plants throughout America.

Eliminate costly ground-level handling of materials—going around men, materials and machines. Go UP and OVER, smoothly and safely through the air, directly to your destination . . . leaving **more room for production and storage.**

Shepard Niles offers you a **complete** line of heavy industrial cranes from 1 to 450 tons for constant or intermittent duty in slow, medium and high speeds; operated from cab or floor.

Send for Industrial Crane bulletin today . . . or ask that a Shepard Niles representative call at your plant—there's NO OBLIGATION.



Building America's Most Complete Line of Cranes and Hoists Since 1903

SHEPARD NILES
CRANE AND HOIST CORPORATION

2390 Schuyler Ave., Montour Falls, N. Y.

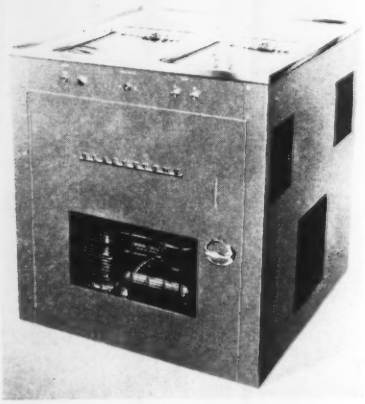
trial use. They come in two forms: Sag 47 silicone fluid for nonaqueous systems and Sag 470 emulsion for aqueous types.

They can be used in wire drawing, plating, galvanizing, and pickling; with cutting, cooling, and lubricating oils, and in hydraulic fluids. *Write*: Silicones Div., Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y. *Phone*: Murray Hill 7-8000

Cleans Ultrasonically

The GW-6 ultrasonic unit for precision cleaning and rinsing of parts and assemblies has two 10 x 14 x 10 in. stainless steel tanks.

The solution in each tank is continuously circulated and filtered to



remove all particles of 2 to 5 micron size or larger. Each tank is activated by transducers operating at about 20 kilocycles.

The basic unit is available with single or multiple tanks which fit into the 25 x 25 in. top. *Write*: Blackstone Corp., Jamestown, N. Y. *Phone*: 51-121

Cleans at 42,000 cps

These ultrasonic cleaners are produced in six models of bench, floor, and self-contained styles, all with forced air cooling. Tank capacities are from 2 to 20 gallons.

Designed for the full range of industrial cleaning and degreasing requirements, they hold promise of savings and improved production on precision components such as fine bore tubing, areas inaccessible

facts about LEDLOY* FREE-MACHINING STEELS

Inland's Special Ledloy Screw-machining Steels Outperform B1113 and in Certain Cases Brass*

There are two grades of Inland Ledloy Steels that have been developed specifically for automatic screw-machine operations, Ledloy Grade A and Ledloy Grade B.

Ledloy Grade A, the most widely used leaded steel grade, machines from 25% to 55% faster than regular free-machining steels and yet retains all the desirable characteristics. Ledloy Grade A contains .15/.35% lead—uniformly dispersed through the steel so that it has no appreciable effect on the steel except to increase its machinability to a marked degree. Ledloy Grade A retains all the properties of open hearth free-machining steel of comparable base analysis.

Whatever you have been machining from regular free-machining steels you can machine from Inland Ledloy Grade A and increase your machining time up to 55%, and at the same time, obtain a superior surface.

The place of Inland Ledloy Grade A has been so firmly established in the screw-machining industry that the A.I.S.I. and S.A.E. have adopted a new grade designation tailored to its specifications. *The new standard grade designation is* C12L14.

Inland Ledloy Grade B, the fastest machining steel produced commercially today, was developed by Inland to replace brass in the manufacture of parts where machinability is the all-important factor. Ledloy Grade B provides much greater strength than brass, yields more parts per pound and yet machines from 80 to 90% as fast as the more costly free-machining brass grades.

Ledloy Grade B, like Grade A, is an open hearth steel with all the desirable open hearth steel qualities. It is rephosphorized, resulphurized and lead treated. The only difference between the two grades is that Grade B contains a higher sulphur content. This additional sulphur increases the machinability of Grade B over Grade A about 25%.

In deciding which grade of Inland Ledloy is best for a particular part you are machining, weigh carefully the following factors: amount of machining to be done on part, type of machining, machining time per cycle, strength required in finished part and cost of material.

Where average machining is called for, you will probably find Ledloy Grade A the most practical. Where more machining operations per part are required, or where the machining is more intricate, Grade B will probably be more satisfactory. The additional cost of Grade B can be more than made up in decreased machining costs.

Whichever grade of Inland Ledloy is best for your particular machining operation, you will find that Ledloy will provide fast machining and excellent finish for the parts you make. Ledloy, because of its lower friction component and inherent lubricating characteristics, will also greatly increase the life of your cutting tools.

Many grades available—Inland Ledloy free-machining steels are available in a wide range of standard carbon and alloy grades in bar form. Ledloy free-machining plates are also produced.

If your product requires machining, it will pay you to get all the details on Inland Ledloy . . . the original leaded steels. Ask your cold-drawer about them today, or write Inland Steel Company, 30 West Monroe Street, Chicago 3, Illinois, for the interesting booklet, "Properties of Inland Ledloy Steels."

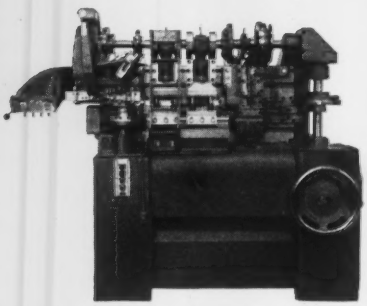
INLAND STEEL

Sales Offices: Chicago · Milwaukee · St. Paul · Davenport
St. Louis · Kansas City · Indianapolis · Detroit · New York

INLAND

Ledloy Steels
the world's most machinable

THE FIRST ENTIRELY NEW FOUR-SLIDE IN FIFTY YEARS!



Visit Booth 1834, Metal Show, Cleveland, Oct. 27—31

A development of industry-wide importance is the Torrington Verti-Slide—a new vertical 4-slide that is the first major innovation in the basic field of wire and strip forming equipment in half a century!

The Verti-Slide was designed to meet a serious need for greater versatility, lower tooling cost, faster set-up time and reduced floor space. We urge you to investigate the new Torrington Verti-Slide in detail.

THE TORRINGTON MANUFACTURING COMPANY

TORRINGTON, CONNECTICUT • VAN NUYS, CALIFORNIA • OAKVILLE, ONTARIO

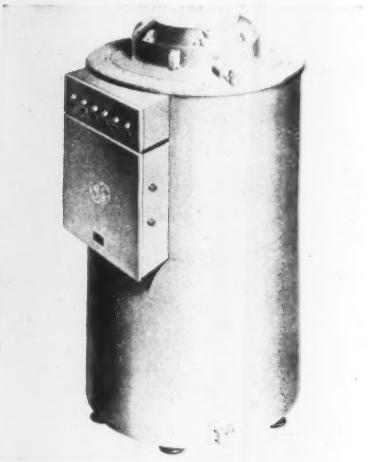
to brushes, and fragile parts.

They operate at 42,000 cps. *Write*: Gulton Industries Inc., 212 Durham Ave., Metuchen, N. J. *Phone*: Liberty 8-2800

Set Uses Common Shaft

Features of a vertical, high frequency, motor-generator set are easy installation and maintenance, and complete protective controls.

The set is designed for foundry melting, forging, vacuum heating,



experimental research, and other induction heating or melting applications which require high frequency current.

Both open and enclosed sets consist of the generator driven by an induction motor mounted above it, with rotors assembled on a common shaft. *Write*: General Electric Co., Schenectady 5, N. Y. *Phone*: Franklin 4-2211

Cleans Large Volume

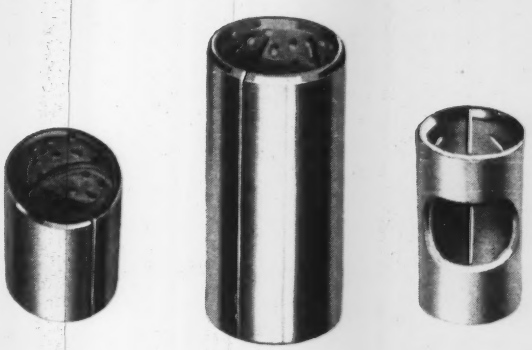
The Series 5000 SonBlaster for ultrasonic cleaning consists of a 10-gallon tank with integral transducers.

The generator is equipped with load and tank selector switches so that it can operate one or two ultrasonic tanks alternately, or submersible transducers in tanks up to 30-gallon capacity.

The unit is plugged into any convenient 110/115-volt circuit. *Write*: Narda Ultrasonics Corp., 625 Main St., Westbury, N. Y. *Phone*: Edgewood 3-5400

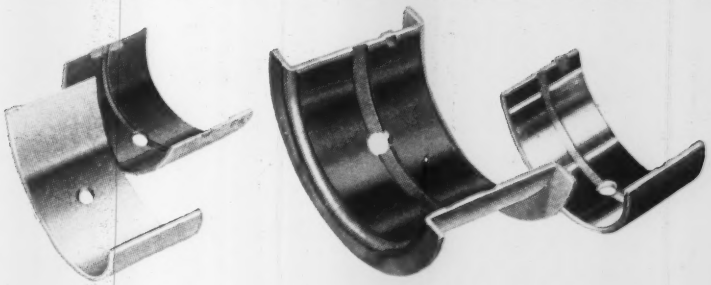
Bimetal and Plain Bushings offer substantial economies

Rolled split plain bronze, steel or aluminum; or steel lined with bronze, babbitt, medium or heavy-duty copper-alloy, or extra heavy-duty aluminum alloy. Many design variations possible, plus volume production economies.



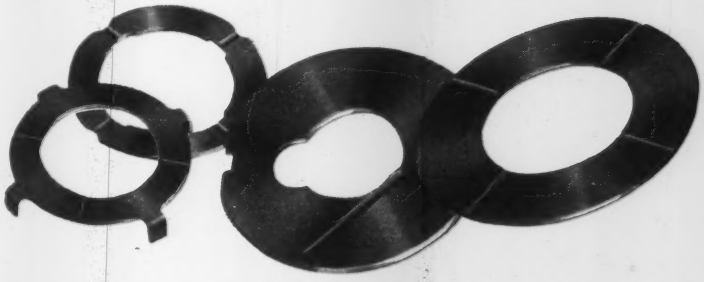
These alloy linings meet 95% of engine bearing needs

Experience shows a steel back, lined with tin- or lead-base babbitt, medium- or heavy-duty copper-alloy or extra heavy-duty aluminum alloy, meets most performance requirements.



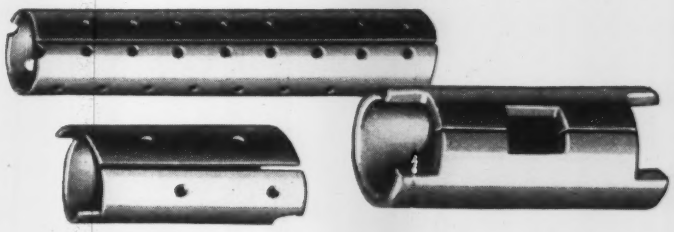
Precision Thrust Washers in Bronze or Bronze on Steel

Cold rolled for heavy duty. Steel faced with copper-alloy on one or both faces. Nibs, lugs, coined oil grooves. Flat, spherical or special shapes. From 1″ to 6″ O.D.



Economical Spacer Tubes for Hundreds of Applications

Money-saving substitute for iron pipe, tubing or machined parts. Delivered ready for assembly, to exact dimensions —or can be brazed to other components.



FEDERAL Mogul
SINCE 1899

FEDERAL-MOGUL DIVISION

FEDERAL-MOGUL-BOWER BEARINGS, INC., 11051 SHOEMAKER, DETROIT 13, MICHIGAN

RESEARCH • DESIGN • METALLURGY • PRECISION MANUFACTURING

NEW literature

Write directly to the company for a copy

Marking Tools

A handbook covers marking tools, such as hand stamps, code stamps, lettering dies knurls, and interchangeable type. Dept. S, Geo. T. Schmidt Inc., 4100 Ravenswood Ave., Chicago 13, Ill.

Single-Phase Motors

Details on 1/3 to 1 hp single-phase motors for belt driven fans and blowers are included in a new brochure, SEC9-820. Electric Motor Div., A. O. Smith Corp., Tipp City, Ohio.

Bench Spotwelders

Bulletin 2-013A describes the EB-1 line of air or foot operated, bench mounted spotwelders. They are designed for joining small parts of unusual metal combinations of precise shapes and sizes. Taylor-Winfield Corp., Warren, Ohio.

Environmental Testing

A brochure describes the facilities at this firm's environmental testing division. It specializes in controlled simulations of natural climatic and mechanically induced environments. Bowser-Morner Testing Laboratories Inc., 141 Bruen St., Dayton 1, Ohio.

Nickel Alloy Prices

A price schedule covering Monel, Inconel, Inconel X, nickel clad copper, and other special nickel alloys has been issued. Publications Section, Riverside-Alloy Metal Div., H. K. Porter Company Inc., Riverside, N. J.

Clamping Tools

A catalog covers application, construction, specification, and price data on over 400 clamping tool items. Wilton Tool Mfg. Co., Inc., Schiller Park, Ill.

Cutting-Grinding Fluids

Bulletin BK-21 describes a complete line of cutting and grinding fluids for metalworking. How to choose the right fluid for a particular operation takes up half the bulletin. Keystone Lubricating Co., 3100 N. 21st St., Philadelphia 32, Pa.

Fire Fighting

Catalog L-1433 describes stationary and mobile industrial fire-fighting apparatus. Industrial Sales Dept., John Bean Div., Food Machinery & Chemical Corp., Lansing 4, Mich.

Infrared Sections

Form 4999 describes the R-130 infrared oven sections which can be assembled to meet batch-type requirements for baking, drying, and product heating. Lighting Div., Safety Industries Inc., P.O. Box 70, Milford, Conn.

Polishing and Buffing

A catalog describes the straight-line automatic polishing and buffing machine. Seven types suit a wide variety of part requirements in low, medium, and high production ranges. Acme Mfg. Co., 1400 E. Nine Mile Rd., Detroit 20, Mich.

Drills

A 40-page catalog presents a complete drill line. Carbide and carbide tipped drills and reamers are covered. Precision Twist Drill & Machine Co., 10 Woodstock St., Crystal Lake, Ill.

Fittings and Flanges

Bulletin FDC-264 catalogs by size, the dimensional and physical data of welding fittings and forged steel flanges in 8 in. nominal pipe sizes. Babcock & Wilcox Co., Tubular Products Div., Welding Fittings Dept., Milwaukee 46, Wis.

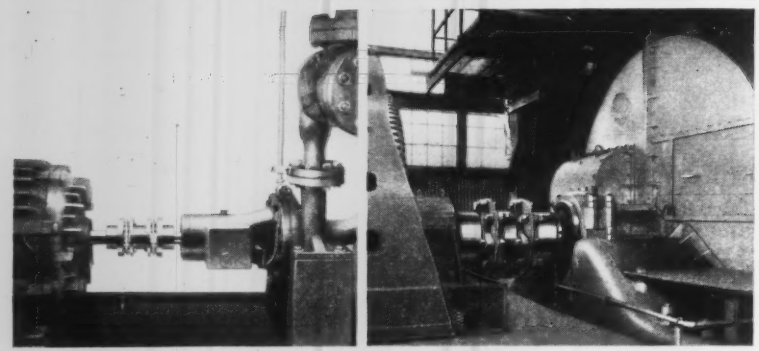
Timing Instruments

A catalog illustrates nearly 50 models of stop watches, chronographs, holders, timer boards, and other instruments for use in industry and research. M. Ducommun Co., 580 Fifth Ave., New York 19, N. Y.

Induction Heating

Bulletin SK-4897 describes vertical, water cooled, inductor-type motor-generator sets for induction heating and melting. Electrical Div., Safety Industries Inc., P. O. Box 904, New Haven, Conn.

Protect your PUMPS and other Indispensable MACHINERY with THOMAS FLEXIBLE COUPLINGS



NO LUBRICATION NO MAINTENANCE NO WEARING PARTS

Future maintenance costs and shutdowns are eliminated when you install Thomas Flexible Couplings. These all-metal couplings are open for inspection while running.

They will protect your equipment and extend the life of your machines.

Properly installed and operated within rated conditions, Thomas Flexible Couplings should last a lifetime.

UNDER LOAD and MISALIGNMENT ONLY THOMAS FLEXIBLE COUPLINGS OFFER ALL THESE ADVANTAGES:

- Freedom from Backlash
- Torsional Rigidity
- Free End Float
- Smooth Continuous Drive with Constant Rotational Velocity
- Visual Inspection While in Operation
- Original Balance for Life
- No Lubrication
- No Wearing Parts
- No Maintenance

Write for Engineering Catalog 51A

THOMAS FLEXIBLE COUPLING COMPANY
WARREN, PENNSYLVANIA, U.S.A.

KAISER CHEMICALS

Average of 470 heats with endwalls of Kaiser Periclase Chrome brick!

450 Heats: "In #4 Furnace, endwalls of Kaiser Periclase Chrome Brick lasted 450 heats — longer than any competitive brick used."

403 Heats: "Kaiser Periclase Chrome Brick tested in endwalls of furnace averaged 403 heats (while competitive endwalls in same furnace campaigns averaged 265 heats)."

557 Heats: "Earlier this month this furnace finished its third campaign for a total of 557 heats with endwall of Kaiser Periclase Chrome Brick. (Competitive brick last only 180-200 heats in other furnaces in shop.)"

3 | 1410 (Total)
470 AVERAGE

Operators testing Kaiser brick against competitive brands consistently come up with reports like these — proof of the money-saving performance advantages you gain with Kaiser Periclase Chrome Brick. Here are the properties that make possible such performance:

1. Low Chromite Content. Chromite content is the minimum amount necessary to provide thermal shock resistance (only 9.1% Cr_2O_3). Lowering of chromite also reduces swelling in presence of iron oxide, thus minimizes buckling and peeling.

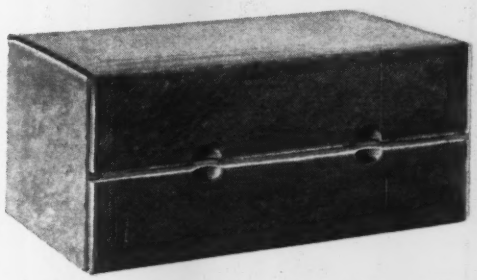
2. Uniform High Strength because the ceramic bond is formed BEFORE the chemical bond burns out.

3. Outstanding Resistance to Distortion, Shrinkage — no liquid phase in the conversion from chemical to ceramic bond.

4. Excellent Resistance to Chemical Attack by furnace fumes, iron oxides and slags is assured by high magnesium oxide content, maximum brick density (low porosity), and chemically stable composition.

Make a comparison test and see how much more life you get with Kaiser Periclase Chrome Brick. Your Kaiser Chemicals Sales Engineer will be glad to help.

Call or write Kaiser Chemicals Division, Dept. S8241, Kaiser Aluminum & Chemical Sales, Inc., at any of the regional offices listed below:
PITTSBURGH 22, PA. . . . 3 Gateway Center
HAMMOND, IND. . . . 518 Calumet Building
OAKLAND 12, CALIF. . . . 1924 Broadway



Refractory Brick & Ramming Materials • Castables & Mortars • Magnesite
Periclase • Deadburned Dolomite • Aluminas • Magnesias

Acme-Newport Steel

...RELIABLE SOURCE FOR ELECTRICAL SHEETS

A BASIC STEEL PRODUCER . . .

WITH EXACTING
METALLURGICAL CONTROL

The ultimate efficiency of motors, generators and other types of electrical equipment is in direct proportion to the quality of lamination steel used in their manufacture. For over 40 years, Acme-Newport has specialized in these electrical steels, exercising diligent quality control in every process, from the melting through the various rolling and heat treating operations to final inspection.

Engineers at Acme-Newport will be glad to discuss your electrical sheet requirements, and assist in balancing steel costs with specific core loss properties, permeability, gage structure and punching qualities. Call or write today for complete facts.

Acme-Newport Steel COMPANY

NEWPORT, KENTUCKY

A SUBSIDIARY OF ACME STEEL COMPANY

RED CIRCLE SERVICE EXPEDITES YOUR RUSH ORDERS

Market Outlook

Production Hits '58 Peak

STEELMAKERS boosted their production to the year's highest level last week. Operating furnaces at 65 per cent of capacity (up 2 points), they turned out about 1,755,000 tons of steel for ingots and castings.

Best previous effort was 1,751,000 tons, produced during the week ended June 22.

In the Chicago district, settlement of a wildcat strike at Inland Steel Co.'s Indiana Harbor Works contributed to a gain of nearly 8 points in steelmaking operations. In the Pittsburgh district, U. S. Steel Corp. resumed production at its Edgar Thomson Works, helping to boost the ingot rate 5 points.

ORDER BOOKS BULGE— Although thin, compared with last year, order books are better filled than they've been at any previous time this year. Reasons: 1. Continued strong demand for construction products (reinforcing bars, wire mesh, galvanized sheets, standard pipe, plates, and structurals). 2. Increased demand for automotive steel. 3. Bigger orders from appliance makers who are getting set for Christmas. 4. Increased buying for inventory replacement by miscellaneous consumers.

DELIVERIES LENGTHEN— "A month or two ago, we could have delivered cold-rolled sheets in ten days," a midwestern mill reports. "Today, we're promising deliveries for late October."

FREIGHT RATES TO BE CUT— On Oct. 15, railroads serving eight midwestern states (Illinois, upper Michigan, Wisconsin, Minnesota, Iowa, Missouri, South Dakota, and Nebraska) expect to cut their freight rates on iron and steel products (excluding scrap). They're making the move to combat truck competition. Reductions will be 3 to 35 cents per cwt, depending on the distance. To compete with midwestern steelmakers, eastern producers will have to absorb more freight. In one observer's opinion, they "may get absorbed right out of the midwest market." U. S. Steel Corp. will be favorably affected, since it has plants at Gary, Ind.; Duluth, Minn.; and South Chicago, Joliet, and Waukegan, Ill. (Its National Tube Div. will have to absorb more on shipments from Lorain, Ohio.) Bethlehem Steel Co. and Jones & Laughlin Steel Corp. are out of luck. It's believed that they'll press eastern railroads for reductions.

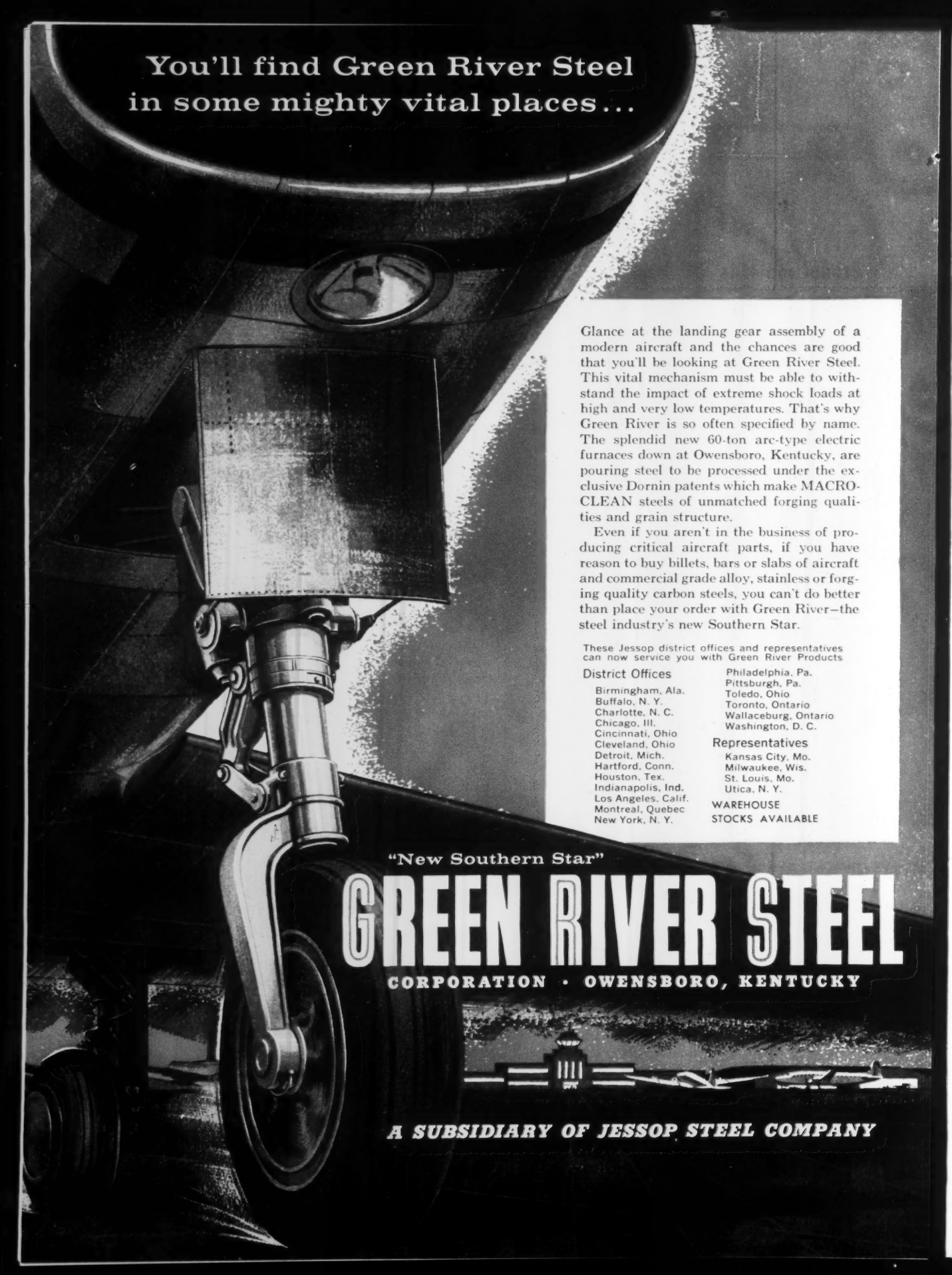
REPUBLIC GETS PIPE ORDER— Although it has been a powerful deterrent, the Memphis court decision hasn't killed all line pipe work. Republic Steel Corp. has received an order for 94,000 tons of 24-in. diameter pipe to be used in a natural gas line rimming the Gulf Coast from Texas to Florida.

TIN PLATE TIPOFF?— Steel Co. of Canada Ltd., Hamilton, Ont., says it won't change its quotations on tin plate before Dec. 31. Although it's not a factor in the U. S. market (its prices are substantially higher, to say nothing of the tariff), Stelco sells to Canadian subsidiaries of the major U. S. can companies. Its action suggests that U. S. producers won't raise their prices.

OUTLOOK FOR SCRAP— Dealers think the scrap market will spurt if the automakers reach a settlement with Walter Reuther, since high level steel production would be assured through the fourth quarter. It's pointed out that some mills prepared for a sudden upturn by buying scrap at relatively low prices during the summer. Says a Pittsburgh broker: "If the operating rate jumps 10 points, I don't expect No. 1 heavy melting to go up more than $6.50 a ton."

WHERE TO FIND MARKETS & PRICES

	News	Prices
Bars, Merchant	231	238
Reinforcing	232	239
Clad Steel	...	242
Coke	249	244
Coal Chemicals	...	244
Charts:		
Finished Steel	...	237
Ingot Rate	236	...
Scrap Prices	...	249
Comparisons	...	237
Contracts Placed	235	...
Contracts Pend.	236	...
Electrodes	...	244
Fasteners	255	241
Ferroalloys	255	246
Fluorspar	...	244
Footnotes	...	241
Imported Steel	...	244
Ingot Rates	236	...
Metal Powder	...	244
Nonferrous Met.	252	254
Ores	...	244
Pig Iron	249	243
Piling	...	238
Plates	233	238
Plating Material	...	255
Prestressed Strand	...	241
Price Indexes	...	237
Producers' Key	239	...
R.R. Materials	235	241
Refractories	...	244
Scrap	248	250
Semifinished	236	238
Service Centers	249	243
Sheets	230	239
Silicon Steel	...	240
Stainless Steel	...	242
Strip	230	240
Structurals	235	238
Tin Mill Prod.	...	240
Tool Steel	...	242
Tubular Goods	233	242
Wire	231	240



Glance at the landing gear assembly of a modern aircraft and the chances are good that you'll be looking at Green River Steel. This vital mechanism must be able to withstand the impact of extreme shock loads at high and very low temperatures. That's why Green River is so often specified by name. The splendid new 60-ton arc-type electric furnaces down at Owensboro, Kentucky, are pouring steel to be processed under the exclusive Dornin patents which make MACRO-CLEAN steels of unmatched forging qualities and grain structure.

Even if you aren't in the business of producing critical aircraft parts, if you have reason to buy billets, bars or slabs of aircraft and commercial grade alloy, stainless or forging quality carbon steels, you can't do better than place your order with Green River—the steel industry's new Southern Star.

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Off-Grade Steel Is Useful

Demand for secondary material is increasing as competition becomes more intense. For applications where steel doesn't show, it's worth considering as a cost cutting measure

DEMAND for secondary steel is "tremendous," says Frank Rownd, manager of Republic Steel Corp.'s Reclaimed Steel Div., Cleveland. Market trends indicate that it will become even more so.

Secondary steel can be many things, depending on definition. Mostly it's material that has been torn or improperly finished, taking it out of prime classifications. But one firm's marketable secondary could be another's scrap. And it's not unheard of for a steel company to sell prime material as secondary—as recession makes sales hard to come by.

Why It's Wanted—But there's a logical reason why demand for the off-grade material should be increasing. It costs less. Most applications are in spots where it doesn't show; a poor finish doesn't matter if no one sees it.

One large midwestern stamper explains: "More often than not our product can be made satisfactorily from secondary material. The end product is just as good as if it were made from prime steel and we have saved about 20 per cent in material costs.

"There is one drawback. This is practical only for small orders. We can't take the chance on filling large orders with secondary steel because we can't be sure that our order for the off-grade material will be filled with enough useable steel."

But as might be expected during a recession, costs are important enough to quibble over. This is a buyers' market. When times are booming and steel is scarce, steel companies will refuse to sell some secondary grades. When orders are slow, they'll ship off-grade material and be glad to get the sale.

Business conditions are also important in the decisions of steel users. When times are good and customers are plentiful, they'll pay for prime steel without arguing even for applications in which secondary material could be used. When customers are scarce, steel users will pay only as much as necessary. If secondary steel will do the job, that's what they want.

Warehouses — Mr. Rownd estimates that about 75 per cent of the mills' secondary steel is purchased by warehouses. Nearly all warehouses handle some off-grade material. About 50 specializing in secondary are members of the Steel Products Warehouse Association, Cleveland.

Steel service centers (as warehouses now prefer to be called) report that the stamping industry is the best customer. They indicate that stampers will continue to demand increasing amounts. Reason: The automotive industry will not pay the stampers enough for their products for them to buy prime steel.

What Forms?—Secondary is generally flat-rolled and strip steel (galvanized, cold rolled, hot rolled, and pickled). Most steelmakers refuse to sell any off-grade form products.

Price is set on the basis of that for the prime product. Example: Republic considers the gage differential and length of the off-grade material in question. Then it charges 85 per cent of the prime price for rejects and 75 per cent for wasters.

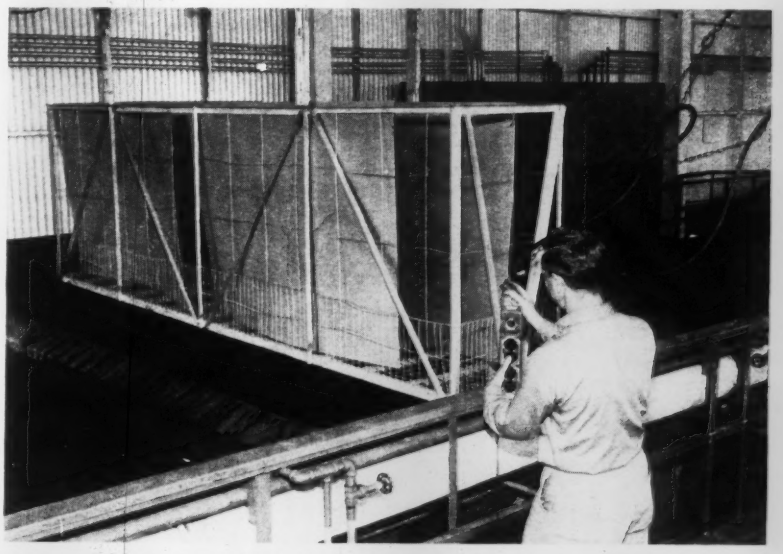
Steel service centers are more arbitrary in setting their prices. They consider the price they pay, their own costs, and the strength of demand and then set a price for each sale—most often around 80 per cent of prime prices.

Market Outlook — Warehouses queried by STEEL expect demand for secondary material to hold at a high level for the next six to eight months at least.

Stuart Henderson, an official at Singer Steel Co., Cleveland, says: "Demand in the next few months is going to stay a little higher than normal. Stampers and fabricators are being pressed to produce at a low price. They're forced to use off-grade material. They couldn't stay in the market if they had to pay prime prices.

"Of course, this doesn't mean that their products are inferior. For their purposes, the material is completely satisfactory."

J. W. Queen, Cleveland district manager of Joseph T. Ryerson & Son Inc., adds that "demand probably won't soar, but there simply will be less available. Low pro-



BASKETS USED IN CHEMICAL MILLING have withstood repeated immersions in strong etchant acids at North American Aviation Inc.'s Missile Development Div., Downey, Calif. They're made of Haynes cobalt-base alloy No. 25. In service over two years, they replaced baskets that required monthly recoating

duction, such as the industry is experiencing now, necessarily results in fewer rejects. Result: Fewer people will be able to buy just what they want."

Here To Stay—Steel producers and warehousers all agree that the secondary steel market is an integral part of the over-all iron and steel industry.

One eastern steelmaker says: "It's difficult to pinpoint the market. It changes as that for prime fluctuates. Today's scrap is tomorrow's sale. The only thing for sure is that there will always be secondary material and people who are willing and anxious to buy it."

Plan Steel Freight Cut

Some 30 railroads serving eight midwestern states are scheduled to lower freight rates on iron and steel products Oct. 15. The reductions, amounting to about 20 to 33 cents per 100 pounds, are aimed at enabling the carriers to better meet increasing truck competition.

The carriers filed the new tariffs covering the rate reductions with the Interstate Commerce Commission. The lower rates will go into effect without an ICC hearing if no objections to the schedule are raised.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 239 & 240

"BUSINESS looks better," a Pittsburgh sheet sales executive reports. "We expect substantially greater shipments this month. In the last couple weeks, we've had more orders and bigger tonnages with every one we receive. Customers are thinking farther ahead.

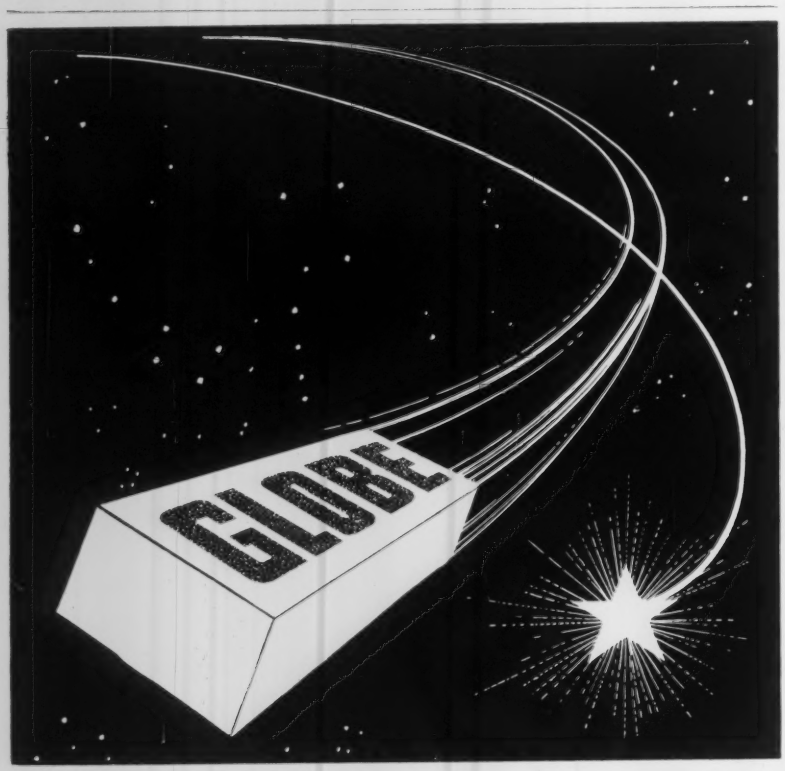
"Automotive buyers placed their October orders three or four weeks ago. They may be worried about the possibility of a strike, but they haven't sent us any cancellations."

Deliveries Lengthening — This seller goes on to say that a month or two ago he could deliver cold-rolled sheets in ten days. Now, he's promising shipments for the weeks of Oct. 20 and 27. He says his customers can shop around for faster service, but "they'll get about the same answer from any mill they call; delivery in five or six weeks."

Despite the possibility of an automotive strike, sheet demand is building up steadily in the East. Household durables are moving better at retail outlets. This is being reflected in stronger operations at the manufacturing plants, and, in turn, better steel orders now that inventories have reached a low point in many cases. In fact, some buying is for stock as well as for early consumption.

Livelier Aspect—The stepping up of appliance manufacturers' needs is giving the sheet market a much more lively appearance. In the Midwest, it is apparent that appliances are over the hump, with the industry ordering steel from area mills in the best volume so far this year. It is the major appliances, like ranges, refrigerators, washers and dryers, that are showing the most promising improvement. Stocks of finished goods for Christmas are being built up.

Specialties, such as enameling stock and electrical sheets, are participating in the upswing in demand along with the major tonnage items —hot and cold rolled sheets. Coated sheets are still moving well. Hot-rolled sheets can be had within two



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to three weeks, and cold rolled in four to five weeks, while shipments of galvanized range five to six weeks.

Tightly Booked—Inland Steel Co. is more tightly booked than any mill in the Chicago district, but it still can take orders for September delivery on almost all products except galvanized sheets and cold-rolled sheets. It is booked up on these two latter products through October. The company expects to put into operation in December new equipment that will increase its cold-rolled sheet capacity by 50 per cent.

Bids close Sept. 18 on 610 tons of carbon sheets for Raritan Arsenal, Metuchen, N. J. An additional 575 tons are being set aside for labor surplus area producers.

Wire . . .

Wire Prices, Pages 240 & 241

Better inquiry for manufacturers' wire is noted, due in part to a gain in automotive specifications. But demand for merchant wire products is slipping.

Midwestern wiremakers are booking larger orders, but an automotive strike would jolt the market. Demand for paving mesh and pipe mesh taxes producers' capacity, but there is room in production schedules for building mesh.

The General Stores Office, Navy, Philadelphia, closes Sept. 16 on 475 tons of welding electrodes, with an additional 115 tons reserved for a small business contract.

Steel Bars . . .

Bar Prices, Page 238

Whatever small improvement may have developed recently in demand for carbon bars, it is not noticeably reflected in delivery promises. Hot bars can be had within two weeks, alloy bars within four weeks. Where cold finishers have hot bar stock on hand (most of them have for the popular sizes) they can give even better deliveries in both cold-drawn carbon and alloy material. One eastern cold drawer can deliver in less than a week on most sizes of cold carbon stock.

Philadelphia area sellers say demand for hot bars has been edging up slightly. The steel service centers, cold finishers, and automotive interests have been showing more interest of late. Machinery and industrial equipment builders, though, are barely sustaining their recent volume of purchases.

In the Midwest, activity in small carbon bars has been substantial for some time. Were this equally true of the larger bars and forging stock, over-all bar business in the area would be considered good. Mill schedules are on a 30-day cycle, but there is some talk they may be extended to 45 days or longer.

"Sales have been pretty brisk in the last ten days," says a Pittsburgh area cold finisher. "It looks like our September shipments will top August's by about 25 per cent. About three-quarters of the orders are for delivery within a week or two, but we've noticed a tendency for customers to start ordering ahead. Six weeks ago we'd have

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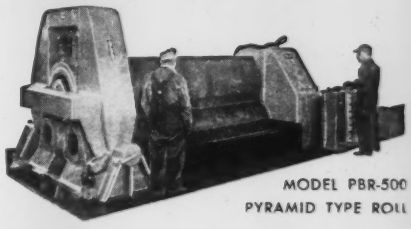
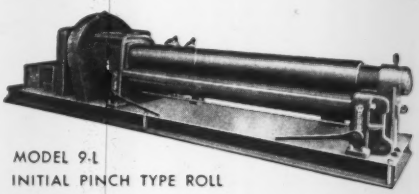


MODEL PBR-500
PYRAMID TYPE ROLL



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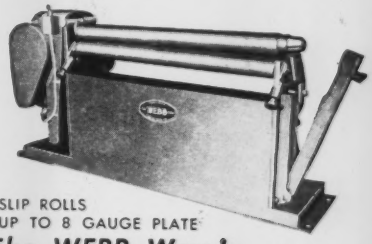
A complete line of small Sheet Metal Forming Rolls are also available. All power-driven with shaft sizes 3" to 5" for the handling of the thinnest gauge material, up to 8 gauge material. Special rolls for the forming of polished sheets, aluminum and stainless steels can be furnished. Complete catalogues on any size machine furnished upon request; write Dept. D.



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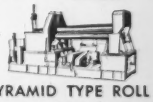

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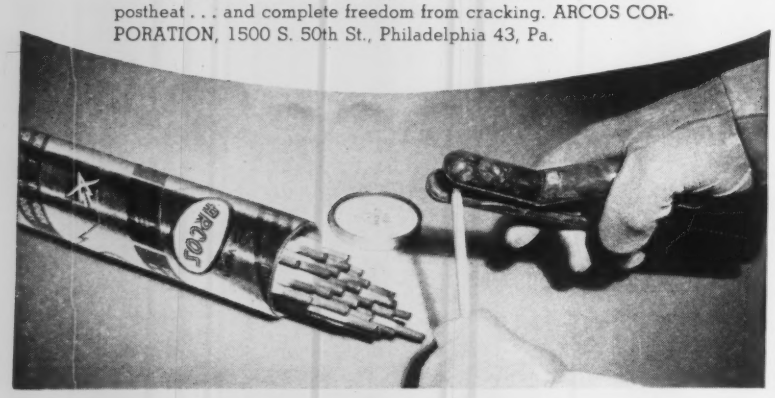
How to produce low alloy welds to resist tons of torture

Job Report Courtesy of
Food Machinery and Chemical Co.
Ordnance Division, San Jose, Calif.

WELD WITH ARCOS

LOW ALLOY ELECTRODES

This 22½ ton armored personnel carrier proves an important point. When working with hard-to-weld low-alloy plate, and welds must be extra strong and tough in the "as welded" condition, it pays to use the highest quality weld metal available. In this case, Arcos Tensilend 100, a low hydrogen coated electrode produced weld metal that matched the physical and chemical properties of the base metal. In addition, it did the job with less nickel than the 19-9 modified electrode formerly used. There was no preheat, no postheat . . . and complete freedom from cracking. ARCOS CORPORATION, 1500 S. 50th St., Philadelphia 43, Pa.



lost an order if we couldn't promise delivery the following day.

"The pickup isn't confined to a single industry. Automotive buying is on the upgrade, but the improvement is no greater than we've seen in other areas. Automotive partmakers are ordering cautiously because of the strike threat."

On the West Coast, barmakers still have open space in September books, but they say they are booking briskly for October shipment.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 238

Active building operations continue to provide a strong demand for reinforcing steel of all kinds. Highwaywork is prominent in the market picture, important tonnage still coming into the market for bridges and other highway structures.

Fabricators serving the building industry continue to take substantial tonnage, but this class of business will probably begin to level off as the building season tapers. Buffalo district fabricators, though, are calling for larger tonnages.

In the Pacific Northwest, no awards of importance have been noted lately. Demand for bars in small lots totals fair tonnage, highway projects, general construction and schools providing good volume.

The U. S. Engineer at Riverdale, N. Dak., postponed bids for the Ft. Peck tunnel liner and surge tanks, involving 525 tons of steel, from Aug. 28 to Sept. 10. Bids are in for Montana highwaywork involving 300 tons of reinforcing, and to Washington State for 250 tons. The largest pending job in the area calls for 1500 tons of bars for the Anchorage, Alaska, deep sea terminal.

Zirconium Sponge Reduced

Mallory-Sharon Metals Corp., Niles, Ohio, has announced sharp cuts in prices of nuclear reactor zirconium sponge. The reduction is attributed to successful operation of the company's new Ashtabula (Ohio) sponge plant and its sodium reduction process.

The sponge will sell at $7 a pound and chunklets at $7.25 a pound in lots of 100 lb or less; $6.50 and $6.75 in quantities of 100 to 500 lb,

and $6 for sponge; $6.25 for chunklets in larger quantities.

Plates . . .

Plate Prices, Page 238

Despite higher plate prices at mills, plate fabrication is being quoted at lower figures than a month ago. This is particularly noticeable on tank fabrication where there has been a further easing in water and oil storage requirements. Public demand for water tanks is holding up better than private requirements.

Shipwork and heavy construction are contributing substantially to plate demand in the East. But there appears to be little general improvement in the market, with a lag continuing in railroad requirements and industrial machinery specifications.

Little, if any, tightening is reported in plate deliveries. Strip plate can be had in two weeks, universal plates in one to two weeks, and sheared plate, two to three weeks.

Tubular Goods . . .

Tubular Goods Prices, Page 242

Merchant pipe is the star performer among the tubular products. Larger tonnages are going into construction.

Line pipe is moving slowly because of the Memphis court ruling that gas transmission companies can't raise their rates without the consent of the utilities they serve.

"If they ever get that case settled, we'll be booked for a year on line pipe," says a Pittsburgh mill executive.

In oil country goods, the emphasis is still on fast shipment from downriver stocks. Oil companies have nearly exhausted their inventories of 5½ and 7 in. OD casing, but they're conserving their supplies of high cost specialty items. That's bad news for tubemakers, for profits on the bread-and-butter items are slim.

Oil producers are cutting costs by using large quantities of reclaimed tubing and casing. They fill out low inventories at one warehouse with surplus material from another.

Some improvement in demand for cast iron pipe is expected. Several small contracts are pending in

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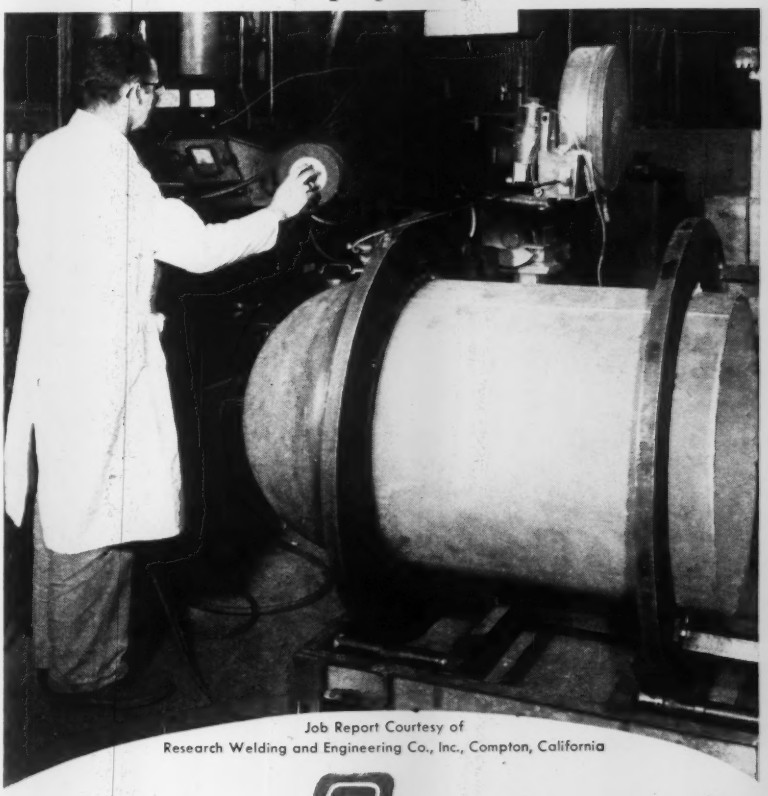

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This welded missile tank had to weigh less than 600 pounds and yet contain air under pressure of 3,000 p.s.i. Arcos EB* Consumable Weld Inserts were used in automatic inert gas arc welding of the dished heads to the tank body. The inserts saved weight by eliminating back-up rings. They also allowed welding to be done conveniently from one side only and produced 100% x-ray quality root passes. Chromenar CMV coiled wire for submerged arc welding was used to complete the welds. After heat treatment the welds matched the base metal, with tensile strength in excess of 200,000 pounds p.s.i. Whenever your job requires a proper balance of weld metal properties, don't guess—use Arcos. ARCOS CORPORATION, 1500 S. 50th Street, Philadelphia 43, Pa.

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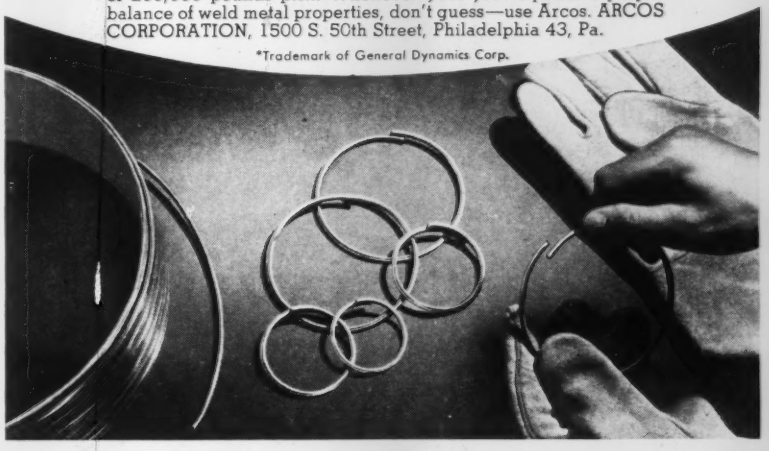

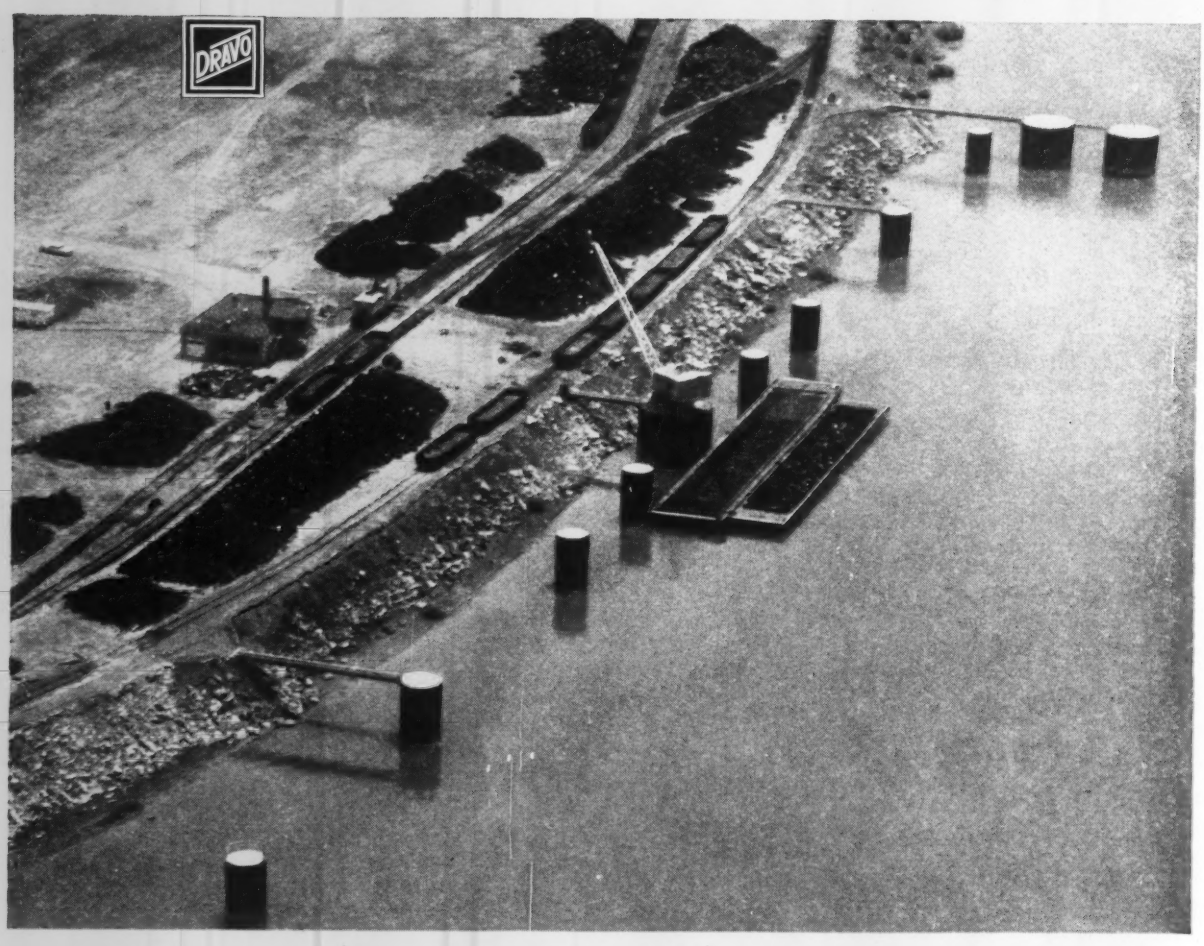

New river-rail terminal speeds scrap to Pittsburgh mills

Twenty-six miles above Pittsburgh, this new Monongahela River Terminals Corporation facility gives district steel mills and shippers important flexibility. Scrap steel, raw materials and finished goods arrive at the terminal via barge or rail—are stored—or trans-shipped out by barge or rail.

Built by Dravo, the terminal's 1065-foot, eleven-cell dock utilizes economical steel sheet pile construction. In addition, 40,000 cubic yards of mud and silt were dredged from the river bottom to create a suitable harbor.

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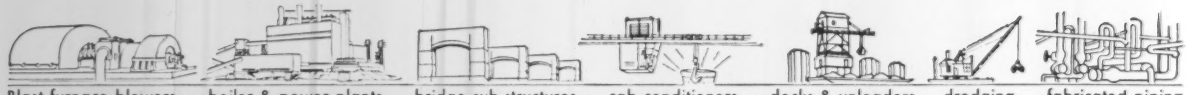

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river sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation

the Pacific Northwest where last week's placements totaled 300 tons. A pickup in buying is anticipated next month.

Republic Steel Corp., Cleveland, last week booked an order for 94,000 tons of 24-in. diameter pipe from Houston Corp. for a natural gas pipeline from Texas to Florida. In miles of pipe involved (450), the order is the largest single tonnage ever placed at the Gadsden (Ala.) pipe mill. The pipe will be shipped in 60-ft and 30-ft lengths, but mostly 60-ft. The order will permit full-scale operation of the mill through the winter.

Air Freight Rate Cut

New commodity rates for machine parts, including construction equipment, were made effective Sept. 2 by Emery Air Freight Corp., New York. The new rates combine the lowest charges in the company's history for cargo over 200 lb and a $5 minimum that is less than regular air freight.

Cargo between principal markets in the U. S. for this type of product will benefit from the reduced rates.

Rails, Cars . . .

Track Material Prices, Page 141

Inland Steel Co., Chicago, discontinued production of rails, joint bars, and tie plates Sept. 13. The move was planned long ago since demand for those products has dwindled. Under the plan, Inland expected to continue production until the end of this year, but then decided to accelerate the permanent closedown so that workmen could be absorbed in other departments.

The U. S. Steel Export Co., New York, has increased export prices on standard rails, light rails, joint bars, and tie plates. With freight included to New York, Philadelphia, or Baltimore, the new prices are: Standard rails, $118.21 per net ton; light rails, $142.21 per net ton; joint bars, for standard rails, $7.44 per 100 pounds; tie plates, $7.07 per 100 pounds.

The higher export prices follow the recent advances in the domestic market.

Structural Shapes . . .

Structural Shape Prices, Page 238

Highwaywork continues outstanding, but over-all demand is beginning to level off seasonally, and fabricators continue to compete actively for new tonnage.

A contract to furnish, fabricate, and erect the structural steel for the new Bruckner Expressway in Queens, New York, has been awarded in a $2.5 million contract to Ingalls Iron Works Co. and Ingalls Steel Construction Co., Birmingham. About 7500 tons of fabricated steel are involved. Another leading award in the East involves 7000 tons for a state bridge in Philadelphia County, Pennsylvania.

Commercial building requirements in the East are bolstered by a 10,000-ton office building for the Western Electric Co., New York.

Bridge estimating is heavier in New England, notably in Connecticut, with September openings approximating 5000 tons. With few exceptions, district structural shops are now estimating bridgework.

American Bridge Div., U. S. Steel Corp., Pittsburgh, is low bidder on the initial structural fabrication contract for the Prudential Life Insurance Center, Boston. This project will take an estimated 40,000 tons of structurals.

Construction of another San Francisco Bay area bridge is scheduled to begin next April. This will be the Benecia-Martinez Bridge. Plans call for its completion in March, 1962.

The recent advances in plain material prices have had little effect in general on fabricated material prices.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

40,000 tons, Civic Center buildings, Prudential Life Insurance Co., Boston, to American Bridge Div., U. S. Steel Corp., Pittsburgh.

7000 tons, state bridgework, Philadelphia County, Pennsylvania, awarded to Phoenix Bridge Co., Phoenixville, Pa., through Buckley & Co., Philadelphia, general contractor.

3800 tons, tunnel work under Grand Concourse, Bronx, New York, through Johnson, Drake & Piper, New York, general contractor, to American Bridge Div., U. S. Steel Corp., Pittsburgh; this tonnage is included in a section of the Cross Bronx Expressway, involving 5200 tons, all of which is being handled by the same general contractor; no action reported on the remaining 1400 tons.

1700 tons, nine highway structures, Hartford Expressway, East Hartford, Conn., to Bethlehem Steel Co., Bethlehem, Pa.; White Oak Excavators Inc., Plainville, Conn., general contractor; 1225 tons, steel piles, to Bethlehem Steel Co.

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866
THE WHELAND COMPANY
CHATTANOOGA 2, TENN.

HAWKRIDGE METALS CORPORATION
North Hampton, New Hampshire
Producers and Sellers of Ductile
TITANIUM & ZIRCONIUM POWDERS
ALL MESHES
HIGH PURITY 99.2%
COMMERCIAL 98.6%

EUREKA FIRE BRICK WORKS
Works: Mt. Braddock, Fayette Co., Pa.
Dunbar, Pa. . . . 4213
COVERED HOT TOP BRICK
INGOT MOLD PLUGS

Sales Office
132 S. Whitfield St.
PITTSBURGH 6, PA. EM: 2-0614

780 tons, three-span plate girder bridge, Naugatuck River, Derby, Conn., to American Bridge Div., U. S. Steel Corp., Pittsburgh; Mariani Construction Co., New Haven, Conn., general contractor; 225 tons, steel piles, to Bethlehem Steel Co., Bethlehem, Pa.

295 tons, Kings College science building, Wilkes Barre, Pa., to Wilkes Barre Iron & Wire Co., that city.

165 tons, also 45 tons of concrete reinforcing bars, state highway bridge, Oakland-Waterville, Maine, to Bancroft & Martin Rolling Mills, Co., South Portland, Maine; Cianchette Bros. Inc., Pittsfield, Maine, general contractor.

130 tons, also 80 tons, concrete reinforcing bars, Lyons Road Bridge, Sidney, Maine, to Bancroft & Martin Rolling Mills Co., South Portland, Maine; Cianchette Bros. Inc., Pittsfield, Maine, general contractor.

STRUCTURAL STEEL PENDING

10,000 tons, office building, Western Electric Co., Broadway and Fulton Street, Manhattan, New York; George A. Fuller Co., New York, general contractor.

2750 tons, steel sheet piling, sea wall, bastion, and boat gates, Wollaston Beach, Quincy, Mass.; also 110 tons, concrete reinforcing steel, and 150 tons, structural steel and miscellaneous iron.

16,545 tons, three bridges, Keystone Reservoir project, Arkansas River; bids Oct. 14, U. S. Engineer, Tulsa, Okla.; also 155 tons, concrete reinforcing bars.

1003 tons, state bridgework, Lackawanna-Susquehanna Counties, Pennsylvania, bids Sept. 25; 483 tons of reinforcing steel also required.

900 tons, 35th Street municipal pier, Brooklyn, New York, Triton Contracting Co., Brooklyn, low on general contract.

910 tons, six grade separations and reinforced concrete pavement, Enfield, Conn.; bids Sept. 15, Hartford, Conn.; also 600 tons, concrete reinforcing bars; 350 tons, steel piles, and 615 tons of mat reinforcement.

640 tons, student center, Manhattan College, Bronx, New York, new bids, Sept. 18.

520 tons, three grade separations, Danbury, Conn.; bids Sept. 15, Hartford, Conn.; also 435 tons, concrete reinforcing bars.

475 tons, railroad bridge over U. S. Route 6, West Hartford, Conn.; bids Sept. 15, Hartford, Conn.; also 330 tons of steel piles, and 90 tons of wrought iron and concrete reinforcing bars.

450 tons, four bridges and ramps, Expressway, Worcester, Mass.; Bartletta Co., Roslindale, Mass., low, general contractor.

365 tons, bridge, Stillwater Avenue, Bangor, Maine; H. B. Fleming Inc., South Portland, Maine, low on the general contract.

806 tons, rebids, Montana state bridgework at Superior, Mont., Sept. 12, to Helena, Mont.

242 tons, state bridgework, Berks County, Pennsylvania, bids Sept. 25; also, 115 tons of reinforcing bars required.

200 tons, emergency gates and other equipment, Howard A. Hanson Dam, Washington State; bids in to the U. S. Engineer, Seattle, low on two schedules: Yuba Mfg. Co., Benecia, Calif., $35,920; Phillips & Davies, Kenton, Ohio, $70,500.

200 tons, five bridges, North Smithfield, R. I.; Campanella & Cardi Construction Co., Hillsgrove, R. I., general contractor; also 410 tons, concrete reinforcing bars.

135 tons, structurals and bars, three single-span bridges, Karkhamstead-Branby, Conn.; bids Sept. 15, Hartford, Conn.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1285 tons, nine highway structures, Hartford Expressway, East Hartford, Conn., to Bethlehem Steel Co., Bethlehem, Pa.; White Oak Excavators Inc., Plainville, Conn., general contractor.

650 tons, state highwaywork, Philadelphia County, Pennsylvania, to Sweets Steel Co., Williamsport, Pa., through Hoffman Contracting Co., Philadelphia, general contractor.

225 tons, three-span welded plate girder bridges, Naugatuck River, Derby, Conn., to Bethlehem Steel Co., Bethlehem, Pa.; Mariani Construction Co., New Haven, Conn., general contractor.

200 tons, building, Kutztown State Teachers College, Kutztown, Pa., to American Steel Engineering Co., Philadelphia.

200 tons, dormitory, Swarthmore College, Swarthmore, Pa., to U. S. Steel Supply Div., U. S. Steel Corp., Pittsburgh.

112 tons, Holy Rosary Church, Claymont, Del., to Taylor-Davis Inc., Wilmington, Del.

100 tons, high school, Connestoga, Pa., to American Steel Engineering Co., Philadelphia.

100 tons, Forest Service bridge, to Bethlehem Pacific Coast Steel Corp., Seattle; Cherf Bros., Ephrata, Wash., general contractor.

91 tons, First Baptist Church, Everett, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; Newland Construction Co., Everett, general contractor.

REINFORCING BARS PENDING

525 tons, penstocks, etc., Ft. Peck power project, Montana; bids postponed from Aug. 28 to Sept. 10, to U. S. Engineer, Riverdale, N. Dak.

483 tons, state bridgework, Lackawanna-Susquehanna Counties, Pennsylvania, bids Sept. 25; 1003 tons of structurals also required.

197 tons, two sections of state bridgework in Susquehanna County, Pennsylvania, bids Sept. 25; 102 tons are for Route LR 1001 3-B and 95 tons for Route LR 1001 3-A.

150 tons, railway overcrossing, Washington State project, Adams County; Walter G. Meyers & Son, Spokane, Wash., low at $144,927, awarded general contract.

115 tons, state bridgework, Berks County, Pennsylvania, bids Sept. 25; 242 tons of structural shapes also required.

70 tons, highway span, Washington State, Skagit County; Croy Construction Co., Bellingham, Wash., general contractor at $93,174.

PLATES . . .

PLATES PLACED

450 tons, alloy, structural, Grade HY-80, Navy Purchasing Office, Washington, D. C., to U. S. Steel Corp., Pittsburgh.

PLATES PENDING

215 tons, floor plates; bids Sept. 22, General Stores Supply Office, Navy, Philadelphia.

Unstated, 2600 ft of 6-in. spillway pipe for Tacoma, Wash.; Frank Coluccio Construction Co., Seattle, low at $264,595 for steel; alternative concrete, also low at $231,600.

Unstated, 2-million-gal. standpipe, District No. 97, Seattle; bids for preliminary construction Sept. 18.

PIPE . . .

CAST IRON PIPE PLACED

156 tons, 6 and 8 in., for Coos Bay, Oreg., to U. S. Pipe & Foundry Co., Seattle.

154 tons, system improvements, Medford, Oreg., to U. S. Pipe & Foundry Co., Seattle.

CAST IRON PIPE PENDING

94 tons, West Slope District, Portland, Oreg.; bids in Sept. 8.

Unstated, expansion at Renton, Wash.; bids in Sept. 9.

Semifinished Steel . . .

Semifinished Prices, Page 238

Steelmaking operations were resumed at seven open hearth furnaces in U. S. Steel Corp.'s Edgar Thomson Works, Braddock, Pa., Sept. 7. A third blast furnace at the works was placed in production Sept. 3. A fourth stack, which has been relined, will be relighted shortly.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

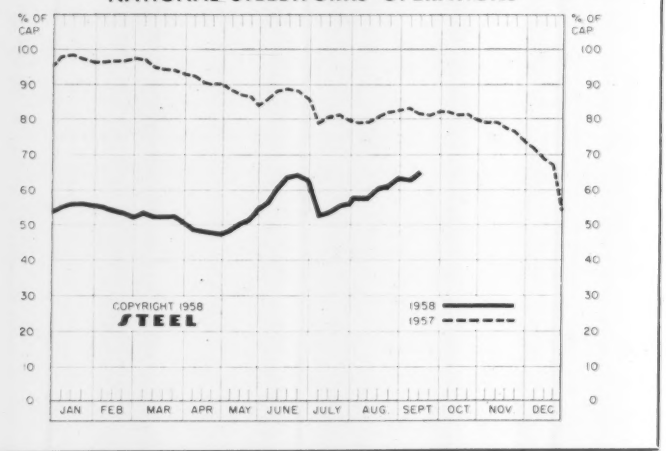
	Week Ended Sept. 14	Change	Same 1957	Week 1956
Pittsburgh	60	+ 5*	81	98.5
Chicago	74.5	+ 7.5*	80	102
Eastern	64	+ 1	85	98
Youngstown	58	+ 8	77	105
Wheeling	68	— 0.5	92.5	98.5
Cleveland	54.5	+ 6*	82.5	107
Buffalo	56	+ 4.5	100	107.5
Birmingham	53.5	+ 1.5	73	95.5
Cincinnati	79	+ 2	83	91
St. Louis	82.5	+ 3.5	86.5	95.5
Detroit	74.5	0*	97	97.5
Western	73	+ 3	94	97
National Rate	65	+ 2	81.5	100.5

INGOT PRODUCTION‡

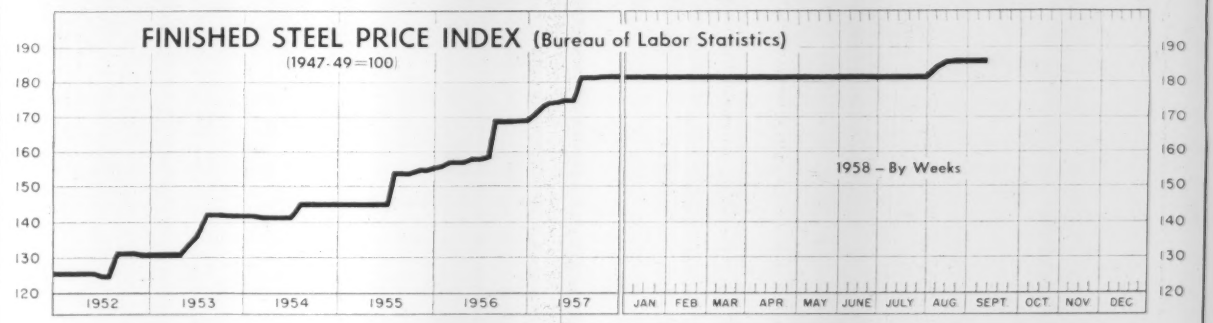
	Week Ended Sept. 14	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	109.8†	103.7	101.6	130.5
NET TONS (In thousands)	1,764†	1,666	1,632	2,097

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Sept. 9, 1958	Week Ago	Month Ago	Aug. Avg	Year Ago
186.6	186.5	186.2	181.4	181.5

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Sept. 9

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825
Rails, Light, 40 lb	7.292
Tie Plates	6.783
Axles, Railway	10.175
Wheels, Freight Car, 33 in. (per wheel)	62.000
Plates, Carbon	6.350
Structural Shapes	6.167
Bars, Tool Steel, Carbon (lb)	0.560
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895
Bars, H.R., Alloy	10.775
Bars, H.R., Stainless, 303 (lb)	0.525
Bars, H.R., Carbon	6.675
Bars, Reinforcing	6.335
Bars, C.F., Carbon	10.710
Bars, C.F., Alloy	14.125
Bars, C.F., Stainless, 302 (lb)	0.553
Sheets, H.R., Carbon	6.350
Sheets, C.R., Carbon	7.300
Sheets, Galvanized	8.545
Sheets, C.R., Stainless, 302 (lb)	0.688
Sheets, Electrical	12.625
Strip, C.R., Carbon	9.489
Strip, C.R., Stainless, 430 (lb)	0.493
Strip, H.R., Carbon	6.250
Pipe, Black, Buttweld (100 ft)	20.525
Pipe, Galv., Buttweld (100 ft)	23.975
Pipe, Line (100 ft)	205.710
Casing, Oil Well, Carbon (100 ft)	201.080
Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200
Tubing, Mechanical, Carbon (100 ft)	26.157
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
Black Plate, Canmaking Quality (95 lb base box)	7.583
Wire, Drawn, Carbon	10.575
Wire, Drawn, Stainless, 430 (lb)	0.653
Bale Ties (bundles)	7.967
Nails, Wire, 8d Common	9.828
Wire, Barbed (80-rod spool)	8.719
Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Sept. 10 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	246.65	246.65	246.65	239.15	189.38
Index in cents per lb	6.682	6.682	6.682	6.479	5.130

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$149.28	$149.28	$149.28	$146.19	$115.56
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	42.67	42.67	41.33	50.17	38.67

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Sept. 10 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld. Philadelphia	5.975	5.975	5.975	5.725	5.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.50	4.35
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.70	4.55
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R. Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.975-4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45-5.95
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.475-5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.35-6.55
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods 1/2-5/8" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton

	Sept. 10 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.01	60.75
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.51	61.25
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin	70.70	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton	245.00†	245.00†	245.00†	255.00†	200.00*

†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	$42.50	$42.50	$42.50	$51.50	$41.50
No. 1 Heavy Melt, E. Pa.	40.00	40.00	38.00	48.00	39.00
No. 1 Heavy Melt, Chicago	45.50	45.50	43.50	51.00	35.50
No. 1 Heavy Melt, Valley	43.50	43.50	43.50	52.50	39.50
No. 1 Heavy Melt, Cleve.	40.00	40.00	40.00	49.50	35.50
No. 1 Heavy Melt, Buffalo	34.50	34.50	34.50	47.50	41.50
Rails, Rerolling, Chicago	65.50	64.50	64.50	65.50	52.00
No. 1 Cast, Chicago	46.50	46.50	45.50	44.50	35.00

COKE, Net Ton

Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	30.50	30.50	30.50	30.50	25.25

Steel Prices

Mill prices as reported to STEEL, Sept. 10, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill points indicates producing company. Key to producers, page 239; footnotes, page 241.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ..... $76.00

INGOTS, Alloy (NT)
Detroit S41 ..... $82.00
Economy,Pa. B14 ..... 82.00
Farrell,Pa. S3 ..... 82.00
Lowellville,O. S3 ..... 82.00
Midland,Pa. C18 ..... 82.00
Munhall,Pa. U5 ..... 82.00
Sharon,Pa. S3 ..... 82.00

BILLETS, BLOOMS & SLABS Carbon, Rerolling (NT)
Bartonville,Ill. K4 ..... $82.00
Bessemer,Pa. U5 ..... 80.00
Buffalo R2 ..... 80.00
Clairton,Pa. U5 ..... 80.00
Ensley,Ala. T2 ..... 80.00
Fairfield,Ala. T2 ..... 80.00
Fontana,Calif. K1 ..... 90.50
Gary,Ind. U5 ..... 80.00
Johnstown,Pa. B3 ..... 80.00
Lackawanna,N.Y. B2 ..... 80.00
Munhall,Pa. U5 ..... 80.00
Owensboro,Ky. G8 ..... 77.50
S.Chicago,Ill. R2, U5 ..... 80.00
S.Duquesne,Pa. U5 ..... 80.00
Sterling,Ill. N15 ..... 80.00
Youngstown R2 ..... 80.00

Carbon, Forging (NT)
Bessemer,Pa. N5 ..... $99.50
Buffalo R2 ..... 99.50
Canton,O. R2 ..... 102.00
Clairton,Pa. U5 ..... 99.50
Conshohocken,Pa. A3 ..... 104.50
Ensley,Ala. T2 ..... 99.50
Fairfield,Ala. T2 ..... 99.50
Farrell,Pa. S3 ..... 99.50
Fontana,Calif. K1 ..... 109.00
Gary,Ind. U5 ..... 99.50
Geneva,Utah C11 ..... 99.50
Houston S5 ..... 104.50
Johnstown,Pa. B2 ..... 99.50
Lackawanna,N.Y. B2 ..... 99.50
LosAngeles B3 ..... 109.00
Midland,Pa. C18 ..... 99.50
Munhall,Pa. U5 ..... 99.50
Owensboro,Ky. C8 ..... 96.00
Seattle B3 ..... 113.00
Sharon,Pa. S3 ..... 99.50
S.Chicago R2, U5, W14 ..... 99.50
S.Duquesne,Pa. U5 ..... 99.50
S.SanFrancisco B3 ..... 109.00
Warren,O. C17 ..... 99.50

Alloy, Forging (NT)
Bethlehem,Pa. R2 ..... $119.00
Bridgeport,Conn. C32 ..... 119.00
Buffalo R2 ..... 119.00
Canton,O. R2, T7 ..... 119.00
Conshohocken,Pa. A3 ..... 126.00
Detroit S41 ..... 119.00
Economy,Pa. B14 ..... 119.00
Farrell,Pa. S3 ..... 119.00
Fontana,Calif. K1 ..... 140.00
Gary,Ind. U5 ..... 119.00
Houston S5 ..... 124.00
Ind.Harbor,Ind. Y1 ..... 119.00
Johnstown,Pa. B2 ..... 119.00
Lackawanna,N.Y. B2 ..... 119.00
LosAngeles B3 ..... 139.00
Lowellville,O. S3 ..... 119.00
Massillon,O. R2 ..... 119.00
Midland,Pa. C18 ..... 119.00
Munhall,Pa. U5 ..... 119.00
Owensboro,Ky. G8 ..... 114.00
Sharon,Pa. S3 ..... 119.00
S.Chicago R2,U5,W14 ..... 119.00
S.Duquesne,Pa. U5 ..... 119.00
Struthers,O. Y1 ..... 119.00
Warren,O. C17 ..... 119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ..... $122.50
Canton,O. R2 ..... 125.00
Cleveland R2 ..... 122.50
Gary,Ind. U5 ..... 122.50
S.Chicago,Ill. R2, W14 ..... 122.50
S.Duquesne,Pa. U5 ..... 122.50
Warren,O. C17 ..... 122.50

SKELP
Aliquippa,Pa. J5 ..... 5.05
Munhall,Pa. U5 ..... 5.05
Pittsburgh J5 ..... 5.05
Warren,O. R2 ..... 5.05
Youngstown R2, U5 ..... 5.05

WIRE RODS
AlabamaCity,Ala. R2 ..... 6.40
Aliquippa,Pa. J5 ..... 6.40
Alton,Ill. L1 ..... 6.60
Bartonville,Ill. K4 ..... 6.50
Buffalo W12 ..... 6.40
Cleveland A7 ..... 6.40
Donora,Pa. A7 ..... 6.40
Fairfield,Ala. T2 ..... 6.40
Houston S5 ..... 6.65
IndianaHarbor,Ind. Y1 ..... 6.40
Johnstown,Pa. B2 ..... 6.40
Joliet,Ill. A7 ..... 6.40
KansasCity,Mo. S5 ..... 6.65
Kokomo,Ind. C16 ..... 6.50
LosAngeles B3 ..... 7.20
Minnequa,Colo. C10 ..... 6.65
Monessen,Pa. P7 ..... 6.40
N.Tonawanda,N.Y. B11 ..... 6.40
Pittsburg,Calif. C11 ..... 7.20
Portsmouth,O. P12 ..... 6.40
Roebling,N.J. R5 ..... 6.50
S.Chicago,Ill. R2, W14 ..... 6.40
SparrowsPoint,Md. B2 ..... 6.50
Sterling,Ill.(1) N15 ..... 6.40
Sterling,Ill. N15 ..... 6.50
Struthers,O. Y1 ..... 6.40
Worcester,Mass. A7 ..... 6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..... 5.50
Atlanta A11 ..... 5.70
Aliquippa,Pa. J5 ..... 5.50
Bessemer,Ala. T2 ..... 5.50
Bethlehem,Pa. B2 ..... 5.55
Birmingham C15 ..... 5.50
Clairton,Pa. U5 ..... 5.50
Fairfield,Ala. T2 ..... 5.50
Fontana,Calif. K1 ..... 6.30
Gary,Ind. U5 ..... 5.50
Geneva,Utah C11 ..... 5.50
Houston S5 ..... 5.60
Ind.Harbor,Ind. I-2, Y1 ..... 5.50
Johnstown,Pa. B2 ..... 5.55
Joliet,Ill. P22 ..... 5.50
KansasCity,Mo. S5 ..... 5.60
Lackawanna,N.Y. B2 ..... 5.55
LosAngeles B3 ..... 6.20
Minnequa,Colo. C10 ..... 5.80
Munhall,Pa. U5 ..... 5.50
Niles,Calif. P1 ..... 6.25
Phoenixville,Pa. P4 ..... 5.55
Portland,Oreg. O4 ..... 6.25
Seattle B3 ..... 6.25
S.Chicago,Ill. U5, W14 ..... 5.50
S.SanFrancisco B3 ..... 6.15
Sterling,Ill. N15 ..... 5.50
Torrance,Calif. C11 ..... 6.20
Weirton,W.Va. W6 ..... 5.50

Wide Flange
Bethlehem,Pa. B2 ..... 5.55
Clairton,Pa. U5 ..... 5.50
Fontana,Calif. K1 ..... 6.45
IndianaHarbor,Ind. I-2 ..... 5.50
Lackawanna,N.Y. B2 ..... 5.55
Munhall,Pa. U5 ..... 5.50
Phoenixville,Pa. P4 ..... 5.55
S.Chicago,Ill. U5 ..... 5.50
Weirton,W.Va. W6 ..... 5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 6.90
Munhall,Pa. U5 ..... 6.80
S.Chicago,Ill. U5, W14 ..... 6.80

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 ..... 8.05
Bessemer,Ala. T2 ..... 8.05
Bethlehem,Pa. B2 ..... 8.10
Clairton,Pa. U5 ..... 8.05
Fairfield,Ala. T2 ..... 8.05
Fontana,Calif. K1 ..... 8.85
Gary,Ind. U5 ..... 8.05
Geneva,Utah C11 ..... 8.05
Houston S5 ..... 8.15
Ind.Harbor,Ind. I-2, Y1 ..... 8.05
Johnstown,Pa. B2 ..... 8.10
KansasCity,Mo. S5 ..... 8.15
Lackawanna,N.Y. B2 ..... 8.10
LosAngeles B3 ..... 8.75
Munhall,Pa. U5 ..... 8.05
Seattle B3 ..... 8.80
S.Chicago,Ill. U5, W14 ..... 8.05
S.SanFrancisco B3 ..... 8.70
Struthers,O. Y1 ..... 8.05

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ..... 8.10
Ind.Harbor,Ind. I-2 ..... 8.05
Lackawanna,N.Y. B2 ..... 8.10
Munhall,Pa. U5 ..... 8.05
S.Chicago,Ill. U5 ..... 8.05

PILING

BEARING PILES
Bethlehem,Pa. B2 ..... 5.55
Ind.Harbor,Ind. I-2 ..... 5.50
Lackawanna,N.Y. B2 ..... 5.55
Munhall,Pa. U5 ..... 5.50
S.Chicago,Ill. I-2, U5 ..... 5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ..... 6.50
Lackawanna,N.Y. B2 ..... 6.50
Munhall,Pa. U5 ..... 6.50
S.Chicago,Ill. I-2, U5 ..... 6.50
Weirton,W.Va. W6 ..... 6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..... 5.30
Aliquippa,Pa. J5 ..... 5.30
Ashland,Ky.(15) A10 ..... 5.10
Atlanta A11 ..... 5.50
Bessemer,Ala. T2 ..... 5.30
Clairton,Pa. U5 ..... 5.30
Claymont,Del. C22 ..... 5.30
Cleveland J5, R2 ..... 5.30
Coatesville,Pa. L7 ..... 5.30
Conshohocken,Pa. A3 ..... 5.30
Ecorse,Mich. G5 ..... 5.30
Fairfield,Ala. T2 ..... 5.30
Farrell,Pa. S3 ..... 5.30
Fontana,Calif.(30) K1 ..... 6.10
Gary,Ind. U5 ..... 5.30
Geneva,Utah C11 ..... 5.30
GraniteCity,Ill. G4 ..... 5.40
Harrisburg,Pa. P4 ..... 5.30
Houston S5 ..... 5.40
Ind.Harbor,Ind. I-2, Y1 ..... 5.30
Johnstown,Pa. B2 ..... 5.30
Lackawanna,N.Y. B2 ..... 5.30
Mansfield,O. E6 ..... 5.30
Minnequa,Colo. C10 ..... 6.15
Munhall,Pa. U5 ..... 5.30
Newport,Ky. A2 ..... 5.30
Pittsburgh J5 ..... 5.30
Riverdale,Ill. A1 ..... 5.30
Seattle B3 ..... 6.20
Sharon,Pa. S3 ..... 5.30
S.Chicago,Ill. U5, W14 ..... 5.30
SparrowsPoint,Md. B2 ..... 5.30
Sterling,Ill. N15 ..... 5.30
Steubenville,O. W10 ..... 5.30
Warren,O. R2 ..... 5.30
Youngstown U5, Y1 ..... 5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ..... 6.75
Fontana,Calif. K1 ..... 7.75
Geneva,Utah C11 ..... 7.05
Houston S5 ..... 7.15
Johnstown,Pa. B2 ..... 7.05
SparrowsPoint,Md. B2 ..... 7.05

PLATES, Wrought Iron
Economy,Pa. B14 ..... 13.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 ..... 7.95
Bessemer,Ala. T2 ..... 7.95
Clairton,Pa. U5 ..... 7.95
Claymont,Del. C22 ..... 7.95
Cleveland J5, R2 ..... 7.95
Coatesville,Pa. L7 ..... 7.625
Conshohocken,Pa. A3 ..... 7.95
Economy,Pa. B14 ..... 7.625
Ecorse,Mich. G5 ..... 7.95
Fairfield,Ala. T2 ..... 7.95
Farrell,Pa. S3 ..... 7.95
Fontana,Calif.(30) K1 ..... 8.75
Gary,Ind. U5 ..... 7.95
Geneva,Utah C11 ..... 7.95
Houston S5 ..... 8.05
Ind.Harbor,Ind. I-2, Y1 ..... 7.95
Johnstown,Pa. B2 ..... 7.95
Munhall,Pa. U5 ..... 7.95
Pittsburgh J5 ..... 7.95
Seattle B3 ..... 8.85
Sharon,Pa. S3 ..... 7.95
S.Chicago,Ill. U5, W14 ..... 7.95
SparrowsPoint,Md. B2 ..... 7.95
Warren,O. R2 ..... 7.95
Youngstown U5, Y1 ..... 7.95

PLATES, ALLOY
Aliquippa,Pa. J5 ..... 7.50
Claymont,Del. C22 ..... 7.50
Coatesville,Pa. L17 ..... 7.50
High-Strength, Low-Alloy
Economy,Pa. B14 ..... 7.50
Farrell,Pa. S3 ..... 7.50
Fontana,Calif. K1 ..... 8.30
Gary,Ind. U5 ..... 7.50
Houston S5 ..... 7.60
Ind.Harbor,Ind. Y1 ..... 7.50
Johnstown,Pa. B2 ..... 7.50
Lowellville,O. S3 ..... 7.50
Munhall,Pa. U5 ..... 7.50
Newport,Ky. A2 ..... 7.50
Pittsburgh J5 ..... 7.50
Seattle B3 ..... 8.40
Sharon,Pa. S3 ..... 7.50
S.Chicago,Ill. U5, W14 ..... 7.50
SparrowsPoint,Md. B2 ..... 7.50
Youngstown Y1 ..... 7.50

FLOOR PLATES
Cleveland J5 ..... 6.375
Conshohocken,Pa. A3 ..... 6.375
Ind.Harbor,Ind. I-2 ..... 6.375
Munhall,Pa. U5 ..... 6.375
S.Chicago,Ill. U5 ..... 6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..... 5.35
Ashland l.c.l.(15) A10 ..... 5.85
Cleveland c.l. R2 ..... 6.05
Warren,O. c.l. R2 ..... 6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..... 5.675
Aliquippa,Pa.(9) J5 ..... 5.675
Alton,Ill. L1 ..... 5.875
Atlanta(9) A11 ..... 5.875
Bessemer,Ala.(9) T2 ..... 5.675
Birmingham(9) C15 ..... 5.675
Buffalo(9) R2 ..... 5.675
Canton,O.(23) R2 ..... 6.15
Clairton,Pa.(9) U5 ..... 5.675
Cleveland(9) R2 ..... 5.675
Ecorse,Mich.(9) G5 ..... 5.675
Emeryville,Calif. J7 ..... 6.425
Fairfield,Ala.(9) T2 ..... 5.675
Fairless,Pa.(9) U5 ..... 5.825
Fontana,Calif.(9) K1 ..... 6.375
Gary,Ind.(9) U5 ..... 5.675
Houston(9) S5 ..... 5.925
Ind.Harbor(9) I-2, Y1 ..... 5.675
Johnstown,Pa.(9) B2 ..... 5.675
Joliet,Ill. P22 ..... 5.675
KansasCity,Mo.(9) S5 ..... 5.925
Lackawanna(9) B2 ..... 5.675
LosAngeles(9) B3 ..... 6.375
Massillon,O.(23) R2 ..... 6.15
Midland,Pa.(23) C18 ..... 6.025
Milton,Pa. M18 ..... 5.825
Minnequa,Colo. C10 ..... 6.125
Niles,Calif. P1 ..... 6.375
N.T'wanda,N.Y.(23) B11 ..... 6.025
Owensboro,Ky.(9) G8 ..... 5.425
Pittsburg,Calif.(9) C11 ..... 6.375
Pittsburgh(9) J5 ..... 5.675
Portland,Oreg. O4 ..... 6.425
Riverdale,Ill.(9) A1 ..... 5.675
Seattle B3, N14 ..... 6.425
S.Ch'e'go(9)R2,U5,W14 ..... 5.675
S.Duquesne,Pa.(9) U5 ..... 5.675
S.SanFran.,Calif.(9)B3 ..... 6.425
Sterling,Ill.(1)(9) N15 ..... 5.675
Sterling,Ill.(9) N15 ..... 5.775
Struthers,O.(9) Y1 ..... 5.675
Tonawanda,N.Y. B12 ..... 5.675
Torrance,Calif.(9) C11 ..... 6.375
Warren,O. C17 ..... 6.025
Youngstown(9) R2, U5 ..... 5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ..... 6.725
Bethlehem,Pa. B2 ..... 6.725
Bridgeport,Conn. C32 ..... 6.80
Buffalo R2 ..... 6.725
Canton,O. R2, T7 ..... 6.725
Clairton,Pa. U5 ..... 6.725
Detroit S41 ..... 6.725
Economy,Pa. B14 ..... 6.725
Ecorse,Mich. G5 ..... 6.725
Fairless,Pa. U5 ..... 6.875
Farrell,Pa. S3 ..... 6.725
Fontana,Calif. K1 ..... 7.775
Gary,Ind. U5 ..... 6.725
Houston S5 ..... 6.975
Ind.Harbor,Ind. I-2, Y1 ..... 6.725
Johnstown,Pa. B2 ..... 6.725
KansasCity,Mo. S5 ..... 6.975
Lackawanna,N.Y. B2 ..... 6.725
Lowellville,O. S3 ..... 6.725
LosAngeles B3 ..... 7.775
Massillon,O. R2 ..... 6.725
Midland,Pa. C18 ..... 6.725
Owensboro,Ky. G8 ..... 6.475
Pittsburgh J5 ..... 6.725
Sharon,Pa. S3 ..... 6.725
S.Chicago R2, U5, W14 ..... 6.725
S.Duquesne,Pa. U5 ..... 6.725
Struthers,O. Y1 ..... 6.725
Warren,O. C17 ..... 6.725
Youngstown U5 ..... 6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 ..... 8.30
Bessemer,Ala. T2 ..... 8.30
Bethlehem,Pa. B2 ..... 8.30
Clairton,Pa. U5 ..... 8.30
Cleveland R2 ..... 8.30
Ecorse,Mich. G5 ..... 8.30
Fairfield,Ala. T2 ..... 8.30
Fontana,Calif. K1 ..... 8.775
Gary,Ind. U5 ..... 8.30
Houston S5 ..... 8.55
Ind.Harbor,Ind. Y1 ..... 8.30
Johnstown,Pa. B2 ..... 8.30
KansasCity,Mo. S5 ..... 8.55
Lackawanna,N.Y. B2 ..... 8.30
Los Angeles B3 ..... 9.00
Pittsburgh J5 ..... 8.30
Seattle B3 ..... 9.05
S.Chicago,Ill. W14 ..... 8.30
S.Duquesne,Pa. U5 ..... 8.30
S.SanFrancisco B3 ..... 9.05
Struthers,O. Y1 ..... 8.30
Youngstown U5 ..... 8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..... 5.825
Houston(9) S5 ..... 5.925
KansasCity,Mo.(9) S5 ..... 5.925
Lackawanna(9) B2 ..... 5.675
Sterling,Ill. N15 ..... 5.775
Sterling,Ill.(1) N15 ..... 5.675
Tonawanda,N.Y. B12 ..... 5.675

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ..... 5.675
Atlanta A11 ..... 5.875
Joliet,Ill. P22 ..... 5.675
Minnequa,Colo. C10 ..... 6.125
Niles,Calif. P1 ..... 6.375
Pittsburgh J5 ..... 5.675
Portland,Oreg. O4 ..... 6.425
SanFrancisco S7 ..... 6.52
Seattle B3 ..... 6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 7.05
KansasCity,Mo. S5 ..... 7.05
Pittsburgh J5 ..... 6.80
Youngstown U5 ..... 6.80

BARS, C. F. Loaded (Including leaded extra)
Carbon
LosAngeles P2, S30 ..... 11.75*

Alloy
Ambridge,Pa. W18 ..... 10.175
BeaverFalls,Pa. M12, 10.175
Camden,N.J. P13 ..... 10.35
Chicago W18 ..... 10.175
Elyria,O. W8 ..... 10.175
Monaca,Pa. S17 ..... 10.175
Newark,N.J. W18 ..... 10.35
SpringCity,Pa. K3 ..... 10.35

*Grade A; add 0.050c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ..... 7.65
BeaverFalls,Pa. M12,R2 ..... 7.65
Birmingham C15 ..... 8.25
Buffalo B5 ..... 7.70
Camden,N.J. P13 ..... 8.10
Carnegie,Pa. C12 ..... 7.65
Chicago W18 ..... 7.65
Cleveland A7, C20 ..... 7.65
Detroit B5, P17 ..... 7.85
Detroit S41 ..... 7.65
Donora,Pa. A7 ..... 7.65
Elyria,O. W8 ..... 7.65
FranklinPark,Ill. N5 ..... 7.65
Gary,Ind. R2 ..... 7.65
GreenBay,Wis. F7 ..... 7.65
Hammond,Ind. J5, L2 ..... 7.65
Hartford,Conn. R2 ..... 8.15
Harvey,Ill. B5 ..... 7.65
LosAngeles(49) S30 ..... 9.10
LosAngeles(49) P2, R2 ..... 9.10
Mansfield,Mass. B2 ..... 8.20
Massillon,O. R2, R8 ..... 7.65
Midland,Pa. C18 ..... 7.65
Monaca,Pa. S17 ..... 7.65
Newark,N.J. W18 ..... 8.10
NewCastle,Pa.(17) B4 ..... 7.65
Pittsburgh J5 ..... 7.65
Plymouth,Mich. P5 ..... 7.90
Putnam,Conn. W18 ..... 8.20
Readville,Mass. C14 ..... 8.20
S.Chicago,Ill. W14 ..... 7.65
SpringCity,Pa. K3 ..... 8.10
Struthers,O. Y1 ..... 7.65
Warren,O. C17 ..... 7.65
Willimantic,Conn. J5 ..... 8.15
Waukegan,Ill. A7 ..... 7.65
Youngstown F3, Y1 ..... 7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19 ..... 6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ..... 9.025
BeaverFalls,Pa. M12,R2 ..... 9.025
Bethlehem,Pa. B2 ..... 9.025
Bridgeport,Conn. C32 ..... 9.175
Buffalo B5 ..... 9.025
Camden,N.J. P13 ..... 9.20
Canton,O. T7 ..... 8.775
Carnegie,Pa. C12 ..... 9.025
Chicago W18 ..... 9.025
Cleveland A7, C20 ..... 9.025
Detroit B5, P17 ..... 9.225
Detroit S41 ..... 9.025
Donora,Pa. A7 ..... 9.025
Elyria,O. W8 ..... 9.025
FranklinPark,Ill. N5 ..... 9.025
Gary,Ind. R2 ..... 9.025
GreenBay,Wis. F7 ..... 9.025
Hammond,Ind. J5, L2 ..... 9.025
Hartford,Conn. R2 ..... 9.325
Harvey,Ill. B5 ..... 9.025
Lackawanna,N.Y. B2 ..... 9.025
LosAngeles P2, S30 ..... 11.00
Mansfield,Mass. B5 ..... 9.325
Massillon,O. R2, R8 ..... 9.025
Midland,Pa. C18 ..... 9.025
Monaca,Pa. S17 ..... 9.025
Newark,N.J. W18 ..... 9.20
Plymouth,Mich. P5 ..... 9.225
S.Chicago,Ill. W14 ..... 9.025
SpringCity,Pa. K3 ..... 9.20
Struthers,O. Y1 ..... 9.025
Warren,O. C17 ..... 9.025
Waukegan,Ill. A7 ..... 9.025
Willimantic,Conn. J5 ..... 9.325
Worcester,Mass. A7 ..... 9.325
Youngstown F3, Y1 ..... 9.025

BARS, Reinforcing (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse, Mich. G5 .....5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 .... 6.375
Ft.Worth,Tex.(4)(26)T4 6.125
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 .....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 .....5.925
Kokomo,Ind. C16 .....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.625
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ..6.425
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.425
S.Chicago,Ill. R2, W14.5.675
S.Duquesne,Pa. U5 ....5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2 .5.675
Sterling,Ill.(1) N15 .....5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ....6.10
Torrance,Calif. C11 ..6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing (Fabricated: to Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 .....7.60
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 .....6.70
Newark, N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 .....7.35
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.95
SparrowsPt.,Md. B2 ...7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ...7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14 18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2 5.575
ChicagoHts.(4)(44) I-2 5.675
ChicagoHts.(4) C2 ....5.675
Franklin,Pa.(3) F5 ....5.575
Franklin,Pa.(4) F5 ....5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 .....5.575
Tonawanda(3) B12 .....5.575
Tonawanda(4) B12 .....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ...5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ...5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ...5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ...5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 .....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14.5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ...5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5, Y1 ...5-10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21 .....6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 .....8.10
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5 .....8.40
Youngstown Y1 .....8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.525
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 .....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14.7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ..7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ...5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ...6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 .....7.30
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1.6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ..7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 .....6.275
SparrowsPoint,Md. B2..6.275
Steubenville,O. W10 ..6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville,O. W10 .....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5 R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 .....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2,Y1.9.275
Irvin,Pa. U5 .....9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2.6.875‡
Ashland,Ky. A10 .....6.875†
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 .....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ...6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ....6.975‡
MartinsFerry,O. W10 .6.875*
Middletown,O. A10 ...6.875†
Pittsburg,Calif. C11 ..7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ...6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.175

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.025
SparrowsPt.(39) B2 ..10.025
Pittsburgh J5 .....10.125

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Youngstown J5 .....7.50
Weirton,W.Va. W6 ....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky.. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 ....6.875
Ind.Harbor,Ind. I-2,Y1.6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 ....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..8.70
Ind.Harbor,Ind. I-2 ..8.70
Mansfield,O. E6 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.
D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.
E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.
H1 Hanna Furnace Corp.
H7 Helical Tube Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.
M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.
N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Follak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.
W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	5.10
Allenport,Pa. P7	5.10
Alton,Ill. L1	5.30
Ashland,Ky.(8) A10	5.10
Atlanta A11	5.10
Bessemer,Ala. T2	5.10
Birmingham C15	5.10
Buffalo(27) R2	5.10
Conshohocken,Pa. A3	5.15
Detroit M1	5.10
Ecorse,Mich. G5	5.10
Fairfield,Ala. T2	5.10
Farrell,Pa. S3	5.10
Fontana,Calif. K1	*5.825*
Gary,Ind. U5	5.10
Ind.Harbor,Ind. I-2, Y1	5.10
Johnstown,Pa.(25) B2	5.10
Lackaw'na,N.Y.(25) B2	5.10
LosAngeles(25) B3	5.85
LosAngeles C1	*8.60*
Minnequa,Colo. C10	6.20
Riverdale,Ill. A1	5.10
SanFrancisco S7	6.60
Seattle(25) B3	6.10
Seattle N14	6.60
Sharon,Pa. S3	5.10
S.Chicago W14	5.10
S.SanFrancisco(25) B3	5.85
SparrowsPoint,Md. B2	5.10
Torrance,Calif. C11	5.85
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown U5	5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.10
Farrell,Pa. S3	8.40
Gary,Ind. U5	8.40
Houston S5	8.65
Ind.Harbor,Ind. Y1	8.10
KansasCity,Mo. S5	8.65
LosAngeles B3	9.30
Lowellville,O. S3	8.40
Newport,Ky. A2	8.40
Sharon,Pa. A2, S3	8.40
S.Chicago,Ill. W14	8.40
Youngstown U5	8.40
Youngstown Y1	8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2	7.575
Conshohocken,Pa. A3	7.575
Ecorse,Mich. G5	7.575
Fairfield,Ala. T2	7.575
Farrell,Pa. S3	7.575
Gary,Ind. U5	7.575
Ind.Harbor,Ind. I-2,Y1	7.575
Lackawanna,N.Y. B2	7.575
LosAngeles(25) B3	8.325
Seattle(25) B3	8.575
Sharon,Pa. S3	7.575
S.Chicago,Ill. W14	7.575
S.SanFrancisco(25) B3	8.325
SparrowsPoint,Md. B2	7.575
Warren,O. R2	7.575
Weirton,W.Va. W6	7.575
Youngstown U5, Y1	7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.35
Warren,O. R2	5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.425
Baltimore T6	7.425
Boston T6	7.975
Buffalo S40	7.425
Cleveland A7, J5	7.425
Dearborn,Mich. D3	7.425
Detroit D2, M1, P20	7.425
Dover,O. G6	7.425
Ecorse,Mich. G5	7.15
Evanston,Ill. M22	7.525
Farrell,Pa. S3	7.425
Follansbee,W.Va. F4	7.425
Fontana,Calif. K1	*9.20*
FranklinPark,Ill. T6	7.525
Ind.Harbor,Ind. Y1	7.425
Indianapolis S41	7.575
LosAngeles J5	9.325
LosAngeles C1	*9.30*
NewBedford,Mass. R10	7.875
NewBritain,Conn. S15	7.875
NewCastle,Pa. B4, E5	7.425
NewHaven,Conn. D2	7.875
NewKensington,Pa. A6	7.425
Pawtucket,R.I. R3	7.975
Pawtucket,R.I. N8	7.975
Philadelphia P24	7.875
Pittsburgh J5	7.425
Riverdale,Ill. A1	7.525
Rome,N.Y.(31) R6	7.425
Sharon,Pa. S3	7.425
Trenton,N.J.(31) R5	8.875
Wallingford,Conn. W2	7.875
Warren,O. R2, T5	7.425
Weirton,W.Va. W6	7.425
Worcester,Mass. A7	7.975
Youngstown S41, Y1	7.425

STRIP, Cold-Rolled Alloy

Boston T6	15.90
Carnegie,Pa. S18	15.05
Cleveland A7	15.05
Dover,O. G6	15.55
Farrell,Pa. S3	15.55
FranklinPark,Ill. T6	15.55
Harrison,N.J. C18	15.05
Indianapolis S41	15.70
Lowellville,O. S3	15.55
Pawtucket,R.I. N8	15.90
Riverdale,Ill. A1	15.55
Sharon,Pa. S3	15.55
Worcester,Mass. A7	15.35
Youngstown S41	15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.45
Dearborn,Mich. D3	10.80
Dover,O. G6	10.80
Ecorse,Mich. G5	10.50
Farrell,Pa. S3	10.80
Ind.Harbor,Ind. Y1	10.80
Sharon,Pa. S3	10.80
Warren,O. R2	10.80

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
New York W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	...	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.85	22.95	27.80
Buffalo W12	18.25	....	....
Fostoria,O. S1	19.05	22.15	....
FranklinPark,Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	*18.85*	*22.95*	*27.80*
NewYork W3	18.85	22.95	27.80
Palmer,Mass. W12	18.85	....	....
Trenton,N.J. R5	18.85	22.95	27.80
Worcester,Mass. A7, T6	18.85	22.95	27.80
Youngstown J5	18.45	22.30	26.65

Weirton,W.Va. W6 ... 10.80
Youngstown Y1 ... 10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	8.175

STRIP, C.R. Electrogalvanized

Cleveland A7	7.15*
Dover,O. G6	7.425*
Evanston,Ill. M22	7.525*
Riverdale,Ill. A1	7.525*
Warren,O. B9, S3, T5	7.425*
Worcester,Mass. A7	7.70*
Youngstown J5	7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3	7.50
Sharon,Pa. S3	7.50

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Farrell,Pa. S3	5.525
Riverdale,Ill. A1	5.675
Sharon,Pa. S3	5.525
Youngstown U5	5.525

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif.K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va.W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$7.85
Fairfield,Ala. T2	7.95
Fairless,Pa. U5	7.95
Fontana,Calif. K1	8.60
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. I-2, Y1	7.85
Irvin,Pa. U5	7.85
Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPt.,Md. B2	7.95
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)	
Aliquippa,Pa. J5	7.50
Gary,Ind. U5	7.50
GraniteCity,Ill. G4	7.60
Ind.Harbor,Ind. Y1	7.50
Irvin,Pa. U5	7.50
Yorkville,O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)	
Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)	
Gary,Ind. U5	$11.25

SILICON STEEL

COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.55	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10

SHEETS (22 Ga., coils & cut lengths) Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	18.10	19.70	20.20	20.70	15.70††
Butler,Pa. A10	....	....	19.70	20.20	20.70	....
Vandergrift,Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	15.70†

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	8.00
Aliquippa,Pa. J5	8.00
Alton,Ill. L1	8.20
Atlanta A1	8.00
Bartonville,Ill. K4	8.10
Buffalo W12	8.00
Chicago W13	8.00
Cleveland A7, C20	8.00
Crawfordsville,Ind. M8	8.10
Donora,Pa. A7	8.00
Duluth A7	8.00
Fairfield,Ala. T2	8.00
Fostoria,O.(24) S1	8.10
Houston S5	8.25
Jacksonville,Fla. M8	8.35
Johnstown,Pa. B2	8.00
Joliet,Ill. A7	8.00
KansasCity,Mo. S5	8.25
Kokomo,Ind. C16	8.10
LosAngeles B3	8.95
Minnequa,Colo. C10	8.25
Monessen,Pa. P7, P16	8.00
N.Tonawanda,N.Y. B11	8.00
Palmer,Mass. W12	8.30
Pittsburg,Calif. C11	8.95
Portsmouth,O. P12	8.00
Rankin,Pa. A7	8.00
S.Chicago,Ill. R2	8.00
S.SanFrancisco C10	8.95
SparrowsPoint,Md. B2	8.10
Sterling,Ill.(1) N15	8.00
Sterling,Ill. N15	8.10
Struthers,O. Y1	8.00
Waukegan,Ill. A7	8.00
Worcester,Mass. A7	8.30

WIRE, Cold Heading Carbon

Elyria,O. W8	8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4	12.65
Buffalo W12	13.40
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	12.65
Minnequa,Colo. C10	13.525
Monessen,Pa. P7, P16	12.65
Muncie,Ind. I-7	13.60
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	13.70
Pittsburg,Calif. C11	13.45
Portsmouth,O. P12	13.40
Roebling,N.J. R5	13.70
SparrowsPt.,Md. B2	12.75
Struthers,O. Y1	12.65
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
NewHaven,Conn. A7	10.05
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.75
Roebling,N.J. R5	9.60
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Worcester,Mass. A7	10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Bartonville,Ill. K4	9.85
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Fostoria,O. S1	9.80
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Milbury,Mass.(12) N6	10.05
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
Muncie,Ind. I-7	9.95
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Wor'ster,Mass.A7,J4,T6	10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	15.80
Bartonville,Ill. K4	15.70
Chicago W13	16.30
Cleveland A7	15.60
Crawfordsville,Ind. M8	15.70
Fostoria,O. S1	*16.30*
Houston S5	15.85
Jacksonville,Fla. M8	15.95
Johnstown,Pa. B2	15.60
KansasCity,Mo. S5	15.85
Kokomo,Ind. C16	16.30
Minnequa,Colo. C10	16.55
Monessen,Pa. P16	15.60
Muncie,Ind. I-7	16.50
Palmer,Mass. W12	16.60
S.SanFrancisco C10	17.15
Waukegan,Ill. A7	15.60
Worcester,Mass. T6	16.60
Worcester,Mass. A7	15.90

WIRE, Tire Bead

Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.65

ROPE WIRE (A)

Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	*13.45*
Johnstown,Pa. B2	13.45
Monessen,Pa. P7	12.75
Muncie,Ind. I-7	13.65
Palmer,Mass. W12	13.75
Portsmouth,O. P12	13.45
Roebling,N.J. R5	13.75
St.Louis L8	12.75
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	12.75
Worcester,Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	....12.35
Baltimore T6	.....12.65
Boston T6	.....12.65
Buffalo W12	.....11.65
Chicago W13	.....11.75
Cleveland A7	.....11.65
Crawfordsville,Ind. M8	.11.65
Dover,O. G6	.....12.35
Farrell,Pa. S3	.....11.65
Fostoria,O. S1	*.....12.35*
FranklinPark,Ill. T6	...12.45
Kokomo,Ind. C16	.....11.65
Massillon,O. R8	.....11.65
Milwaukee C23	.....11.85
Monessen,Pa. P7, P16	..11.65
Palmer,Mass. W12	....11.95
Pawtucket,R.I. N8	....11.95
Philadelphia P24	.....12.65
Riverdale,Ill. A1	.....11.75
Rome,N.Y. R6	.....11.65
Sharon,Pa. S3	.....11.65
Trenton,N.J. R5	.....12.65
Warren,O. B9	.....11.65
Worcester,Mass. A7	..11.95
Worcester,Mass. T6	...12.65

NAILS, Stock	**Col.**
AlabamaCity,Ala. R2	...173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	..175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	...175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7 ....$9.10

NAILS, Cut (100 lb keg)
To Dealers (33)

Conshohocken,Pa. A3	.$10.30
Wheeling,W.Va. W10	...9.80

POLISHED STAPLES	**Col.**
AlabamaCity,Ala. R2	...175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	..177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler
(14½ Ga.)(per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2.	$10.26
Atlanta A11	.....10.36
Bartonville,Ill. K4	.....10.36
Buffalo W12	.....10.26
Chicago W13	.....10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	.....10.26
Duluth A7	.....10.26
Fairfield,Ala. T2	.....10.26
Houston S5	.....10.51
Jacksonville,Fla. M8	..10.36
Johnstown,Pa. B2	.....10.26
Joliet,Ill. A7	.....10.26
KansasCity,Mo. S5	...10.51
Kokomo,Ind. C16	.....10.36
LosAngeles B3	.....11.05
Minnequa,Colo. C10	...10.51
Pittsburg,Calif. C11	...11.04
S.Chicago,Ill. R2	.....10.26
S.SanFrancisco C10	...11.04
SparrowsPt.,Md. B2	..10.36
Sterling,Ill.(37) N15	..10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	..$10.60
Atlanta A11	.....10.70
Bartonville,Ill. K4	.....10.70
Buffalo W12	.....10.60
Chicago W13	.....10.60
Crawfordsville,Ind. M8	.10.70
Donora,Pa. A7	.....10.60
Duluth A7	.....10.60
Fairfield,Ala. T2	.....10.60
Houston S5	.....10.85
Jacksonville,Fla. M8	...10.70
Johnstown,Pa. B2	....10.60
Joliet,Ill. A7	.....10.60
KansasCity,Mo. S5	....10.85
Kokomo,Ind. C16	....10.70
LosAngeles B3	.....11.40
Minnequa,Colo. C10	...10.85
Pittsburg,Calif. C11	...11.40
S.Chicago,Ill. R2	.....10.60
S.SanFrancisco C10	...11.40
SparrowsPt.,Md. B2	...10.70
Sterling,Ill.(37) N15	...10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2.	$10.65
Atlanta A11	.....10.75
Bartonville,Ill. K4	.....10.75
Buffalo W12	.....10.65
Chicago W13	.....10.65
Crawfordsville,Ind. M8	.10.75
Donora,Pa. A7	.....10.65
Duluth A7	.....10.65
Fairfield,Ala. T2	.....10.65
Houston S5	.....10.90
Jacksonville,Fla. M8	..10.75
Johnstown,Pa. B2	....10.65
Joliet,Ill. A7	.....10.65
KansasCity,Mo. S5	....10.90
Kokomo,Ind. C16	....10.75
LosAngeles B3	.....11.45
Minnequa,Colo. C10	...10.90
Pittsburg,Calif. C11	...11.45
S.Chicago,Ill. R2	.....10.65
S.SanFrancisco C10	...11.45
SparrowsPt.,Md. B2	...10.75
Sterling,Ill.(37) N15	...10.75

BALE TIES, Single Loop	**Col.**
AlabamaCity,Ala. R2	...212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	..214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	...236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	..172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	..172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	172

WIRE, Barbed	**Col.**
AlabamaCity,Ala. R2	..193**
Aliquippa,Pa. J5	.....190§
Atlanta A11	.....198*
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	..198
Donora,Pa. A7	.....193†
Duluth A7	.....193†
Fairfield,Ala. T2	.....193†
Houston S5	.....198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	....196§
Joliet,Ill. A7	.....193†
KansasCity,Mo. S5	....198**
Kokomo,Ind. C16	....195†
Minnequa,Colo. C10	...198**
Monessen,Pa. P7	.....196§
Pittsburg,Calif. C11	...213†
Rankin,Pa. A7	.....193†
S.Chicago,Ill. R2	.....193**
S.SanFrancisco C10	....213*
SparrowsPoint,Md. B2	..198§
Sterling,Ill.(7) N15	....198††

WOVEN FENCE, 9-15 Ga.	**Col.**
Ala.City,Ala. R2	.....187**
Aliq'ppa,Pa.9-14½ga.J5	190§
Atlanta A11	.....192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	..192
Donora,Pa. A7	.....187†
Duluth A7	.....187†
Fairfield,Ala. T2	.....187†
Houston S5	.....192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	..190§
Joliet,Ill. A7	.....187†
KansasCity,Mo. S5	....192**
Kokomo,Ind. C16	.....189†
Minnequa,Colo. C10	...192**
Pittsburg,Calif. C11	....210†
Rankin,Pa. A7	.....187†
S.Chicago,Ill. R2	.....187**
Sterling,Ill.(7) N15	....192††

WIRE (16 gage)	**An'ld Galv. Stone**	**Stone**
Ala.City,Ala.R2	17.15	18.70**
Aliq'ppa,Pa. J5	..17.15	18.95
Bartonville K4	..17.25	19.05
Cleveland A7	....17.15	....
Craw'dsville M8	..17.25	19.05
Fostoria,O. S1	*18.35*	*19.90†*
Houston S5	....17.40	18.95**
Jacksonville M8	..17.25	19.05
Johnstown B2	..17.15	18.95§
Kan.City,Mo. S5	..17.40	....
Kokomo C16	...17.25	18.80*
Minnequa C10	..18.10	19.65**
P'im'r,Mass.W12	18.15	19.70†
Pitts.,Calif. C11	..17.50	19.05†
S.SanFran. C10	18.20	19.75**
SparrowsPt. B2	..17.25	19.05§
Sterling(37)N15	17.25	19.05††
Waukegan A7	..17.15	18.70†
Worcester A7	...17.45	....

WIRE, Merchant Quality (6 to 8 gage)	**An'ld Galv.**
Ala.City,Ala. R2	9.00 9.55**
Aliquippa J5	....8.65 9.325§
Atlanta(48) A11	..8.75 9.425*
Bartonville(48) K4	.9.10 9.775
Buffalo W12	...9.00 9.55†
Cleveland A7	....9.00 ....
Crawfordsville M8	8.75 9.425
Donora,Pa. A7	..9.00 9.55†
Duluth A7	....9.00 9.55†
Fairfield T2	....9.00 9.55†
Houston(48) S5	..9.25 9.80**
Jacks'ville,Fla. M8	8.75 9.425
Johnstown B2(48)	8.65 9.325§
Joliet,Ill. A7	....9.00 9.55†
Kans.City(48)	S5.9.25 9.80**
Kokomo(48)	C16..9.10 9.65†
LosAngeles B3	..9.95 10.625§
Minnequa	C10 ..9.25 9.80**
Monessen	P7(48) 8.65 9.325§
Palmer,Mass.	W12 9.30 9.85†
Pitts.,Calif.	C11..9.95 10.50†
Rankin,Pa.	A7....9.00 9.55†
S.Chicago	R2 ..9.00 9.55**
S.SanFran.	C10..9.95 10.50**
Spar'wsPt.B2(48)	8.75 9.425§
Sterling(48)	N15 9.25 9.925††
Sterling(1)	(48) 9.15 9.825††
Struthers,O.	Y1 ..9.00 9.65‡
Worcester,Mass.	A7 9.30 9.85†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts
Full Size Body (cut thread)

½ in. and smaller:	
3 in. and shorter	53.0
3¼ in. thru 6 in.	47.0
Longer than 6 in.	33.0
⅝ in., 3 in. & shorter	44.0
3¼ in. thru 6 in.	37.0
Longer than 6 in.	27.0
¾ in. thru 1 in.:	
6 in. and shorter	33.0
Longer than 6 in.	27.0
1⅛ in. and larger:	
All lengths	27.0

Undersize Body (rolled thread)

½ in. and smaller:	
3 in. and shorter	53.0
3¼ in. thru 6 in.	47.0

Machine Bolts, Hot Galvanized
(Square & Hex, Full & Undersize Body)

½ in. and smaller:	
3 in. and shorter	38.0
3¼ in. thru 6 in.	29.0
Longer than 6 in.	15.0
⅝ in., 3 in. & shorter	27.0
3¼ in. thru 6 in.	17.0
Longer than 6 in.	10.0
¾ in. thru 1 in.:	
6 in. and shorter	18.0
Longer than 6 in.	7.0
1⅛ in. and larger:	
All lengths	7.0

Carriage, Plow & Lag Bolts, Hot Galvanized

½ in. and smaller:	
6 in. and shorter	28.0
Larger diameters and longer lengths	13.0

Carriage Bolts
Full Size Body (cut thread) & Undersize Body (rolled thread)

½ in. and smaller:	
6 in. and shorter	46.0
Larger diameters and longer lengths	32.0

NUTS

(Container quantities and over)

Square Nuts, Reg. & Heavy:	
All sizes	56.0
Square Nuts, Reg. & Heavy, Hot Galvanized:	
All sizes	41.0

(Full container)

Hex Nuts, Reg. & Heavy	
Hot Pressed & Cold Punched:	
⅜ in. and smaller	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger	51.5
Hex Nuts, Semifinished, Heavy (Incl. Slotted):	
⅜ in. and smaller	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger	51.5
Hex Nuts, Finished (Incl. Slotted and Castellated):	
⅜ in. and smaller	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger	51.5
Semifinished Hex Nuts, Reg. (Incl. Slotted):	
⅜ in. and smaller	62.0
⅞ in. to ⅞ in., incl.	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger	51.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:	
6 in. and shorter:	
⅜ in. and smaller	35.0
⅞, ⅞, and 1 in.	16.0
Longer than 6 in.:	
⅜ in. and smaller	3.0
⅞, ⅞, and 1 in.	+11.0
High Carbon, Heat Treated:	
6 in. and shorter:	
⅜ in. and smaller	20.0
⅞, ⅞, and 1 in.	+ 5.0
Longer than 6 in.:	
⅜ in. and smaller	+19.0
⅞, ⅞, and 1 in.	+39.0
Flat Head Capscrews:	
⅜ in. and smaller, 6 in. and shorter	+85.0
Setscrews, Square Head, Cup Point, Coarse Thread:	
Through 1 in. diam.:	
6 in. and shorter	+ 5.0
Longer than 6 in.	+29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.85
⅞ in. and smaller by 6 in. and shorter: 15.0%

PRESTRESSED STRAND

(High strength, stress relieved; 7 wire uncoated. Net prices per 1000 ft, 40,000 lb and over)

	Strand Diameter, Inches				
	1/4	5/16	3/8	7/16	1/2
Alton,Ill. L1	$32.15	$48.20	$61.55	$81.10	$105.65
Buffalo W12	32.15	48.20	61.55	81.10	105.65
Cleveland A7	32.15	48.20	61.55	81.10	.....
KansasCity,Mo. U3	32.15	48.20	61.55	81.10	105.65
Monessen,Pa. P6	32.15	48.20	61.55	81.10	105.65
NewHaven,Conn. A7	32.15	48.20	61.55	81.10	105.65
Pittsburg,Calif. C11	....	48.20	61.55	81.10	.....
Pueblo,Colo. W12	32.15	48.20	61.55	81.10	105.65
Roebling,N.J. R5	32.15	48.20	61.55	81.10	105.65
St.Louis L8	32.15	48.20	61.55	81.10	105.65
Waukegan,Ill. A7	32.15	48.20	61.55	81.10	105.65

RAILWAY MATERIALS

	Standard		Tee Rails	
Rails	**No. 1**	**No. 2**	**All No. 2**	**60 lb Under**
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	6.725
Huntington,W.Va. C15	....	....	....	6.50
Johnstown,Pa. B2	....	....	....(16)	6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	....6.875
Gary,Ind. U5	.....6.875
Lackawanna,N.Y. B2	..6.60
Minnequa,Colo. C10	....6.60
Seattle B3	.....6.75
Steelton,Pa. B2	.....6.60
Torrance,Calif. C11	....6.875

JOINT BARS

Bessemer,Pa. U5	.....7.25
Fairfield,Ala. T2	.....7.25
Joliet,Ill. U5	.....7.25
Lackawanna,N.Y. B2	..7.25
Minnequa,Colo. C10	..6.975
Steelton,Pa. B2	.....7.25

AXLES

Ind.Harbor,Ind. S13	..9.125
Johnstown,Pa. B2	....9.125

TRACK BOLTS, Untreated

Cleveland R2	....14.75
KansasCity,Mo. S5	...15.35
Lebanon,Pa. B2	....15.35
Minnequa,Colo. C10	...14.75
Pittsburgh P14	.....14.75
Seattle B3	.....15.85

SCREW SPIKES

Lebanon,Pa. B2 .....15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	.....9.75
Ind.Harbor,Ind. I-2, Y1	10.10
KansasCity,Mo. S5	....10.10
Lebanon,Pa. B2	.....9.75
Minnequa Colo. C10	....9.75
Pittsburgh J5	.....10.10
Seattle B3	.....10.60
S.Chicago,Ill. R2	.....10.10
Struthers,O. Y1	.....10.10
Youngstown R2	.....10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Marchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. Base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven,Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.875c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Youngstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Alton, Ill. L1	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Benwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Butler, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+26	+7.75	+22	+4.25	+17.5	+1.75	+16.75
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sharon, Pa. S4	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sparrows Pt., Md. B2	0.5	+26	+11.5	+35	+22	+43.5	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Wheatland, Pa. W9	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Alton, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Benwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Etna, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Fairless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Fontana, Calif. K1	+1.25	+15.75	+0.75	+15.25	0.75	+15.5	0.75	+15.5	+9.75	+26.5	+9.75	+26.5
Indiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
Lorain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sharon, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Wheatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Youngstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	39.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	40.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	41.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	42.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	44.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	45.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	45.75	55.00	55.00
304L	....	....	....	48.25	51.50	53.00	55.50	63.25	63.25
305	28.50	36.75	42.50	47.50	45.25	47.75	46.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	55.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	66.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	87.75	96.75	96.75
314	....	....	....	77.50	....	86.50	91.00	87.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	71.75	80.75	80.75
316L	....	....	55.50	70.00	76.50	77.00	80.75	79.50	89.25	89.25
317	48.00	60.00	76.75	88.25	86.25	90.75	88.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	54.75	65.50	65.50
330	....	....	....	118.75	....	132.00	138.50	135.50	149.25	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	64.75	79.25	79.25
403	....	....	28.25	....	32.00	33.75	30.00	40.25	40.25
405	19.50	25.50	29.75	36.00	33.50	35.25	32.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	30.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	31.25	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	40.25	62.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	31.00	40.75	40.75
430F	....	....	....	....	33.00	34.75	31.75	51.75	51.75
431	....	28.75	37.75	....	42.00	44.25	41.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	42.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	34.75	40.65

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	V-Cr Hot Work (H-13)	0.550
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr-Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.25	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% and $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.00	8.90	10.32	....	8.70	8.65	12.33#	15.18	8.50	8.65	9.75
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	8.64	8.89	10.99
Boston	9.38	10.44	11.45	53.50	9.74	10.16	13.39#	15.71	10.03	10.07	11.87
Buffalo	8.25	9.00	11.07	55.98	8.75	9.15	11.45#	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	53.00	8.51	8.99	9.15	15.05	9.15	8.89	10.20
Cincinnati	8.34	9.48	10.45	52.43	8.83	9.31	11.53#	15.37	9.56	9.27	10.53
Cleveland	8.18	9.45	10.20	52.33	8.63	9.10	11.25#	15.16	9.39	9.13	10.44
Dallas	7.50	8.80	....	....	7.65	7.60	11.01	....	7.65	8.10	9.35
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.43	9.70	10.45	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.20	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.25	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.70[2]	10.80[2]	12.15[2]	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[2]	11.30[2]
Memphis, Tenn.	8.55	9.80	....	....	8.60	8.97	11.96#	....	9.01	8.93	10.56
Milwaukee	8.33	9.58	10.23	....	8.65	9.13	9.39	15.19	9.22	9.05	10.34
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.64	9.99	13.25#	15.50	9.74	9.77	11.05
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	9.25	11.17	52.69	8.70	8.65	11.50	15.48	8.50	8.75	9.75**
Pittsburgh	8.18	9.45	10.45	52.00	8.61	8.99	11.25#	15.05	9.00	8.89	10.20
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45‡‡	9.70	13.00	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.20	57.38	10.00	10.10	14.70	16.80	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.70	16.80	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price, 1 in. round C-1018.

Base quantities 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [2]—30,000 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $168; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $253; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $310.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe Pa., $360; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $29-$31, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $26.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic concentrates	$2-64% 18.00-19.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom
Brazilian iron ore, 68.5%	26.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$9.50-10.00
Domestic, concentrates f.o.b. milling points	17.00-22.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included). $1.10 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian	
48% 3:1	$42.00-44.00
48% 2.8:1	38.00-40.00
48% no ratio	29.00-31.00
South African Transvaal	
48% no ratio	$29.00-31.00
44% no ratio	22.00-23.00
Turkish	
48% 3:1	$51.00-55.00
Domestic	
Rail nearest seller	
18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over.. F.o.b. Riverton or Camden, N. J., west of Mississippi River.	10.50 / 9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.00
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)..	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	

Aluminum: Atomized, 500-lb drum, freight allowed: Carlots	39.50
Ton lots	41.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	31.00-46.70†
Bronze, 5000-lb lots	47.20-51.50†
Copper: Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	48.80-53.50†
Phosphor-Copper, 5000-lb lots	59.30
Copper (atomized) 5000-lb lots	39.80-48.30†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70‡

Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh, nominal; 1000 lb and over	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $5.15 freight zone from works.

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.30	$5.30	$5.30	$5.50
Bar Size Angles	5.05	5.06	5.05	5.42
Structural Angles	5.05	5.05	5.05	5.42
I-Beams	5.11	5.11	5.11	5.45
Channels	5.11	5.11	5.11	5.45
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	6.07	6.07	6.07	6.43
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.50	6.50	6.50	6.90
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails ($)	8.02	8.02	7.92	8.20

†Per 82 lb net reel. $Per 100-lb kegs, 20d nails and heavier.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00

Per ton, bulk, ovens

Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

*Product Development by William M. Schmidt Associates.

H & K perforated metals serve a function of design

The orientation of television, AM-FM radio and phonographic elements into one modular housing containing all mechanical, electronic and control devices is one function of the mock-up illustrated. Another is the utilization of H & K perforated metal for the necessary ventilation and sound requirements of such equipment.

H & K Perforated Metal offers the Industrial Designer and other men of ideas, materials that are aesthetically interesting and functionally honest. If perforated materials can be utilized in your product, please contact us. Our sales engineers will be pleased to work with you.

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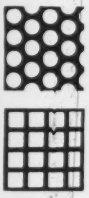

Write for Catalog

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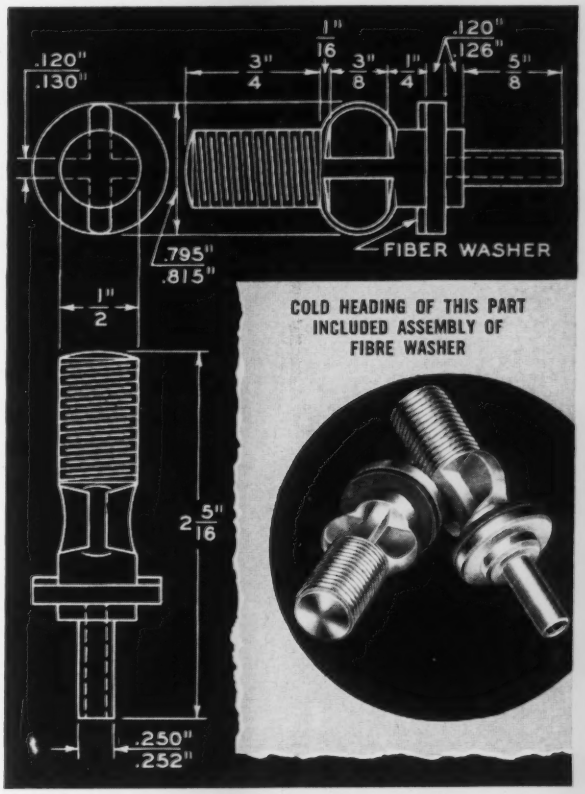

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Functionally the design of the above part was ideal. But its six different diameters and the need to pre-assemble a fibre washer posed production difficulties. Making it by conventional machining methods would price it out of reach. It looked too complex for cold heading.

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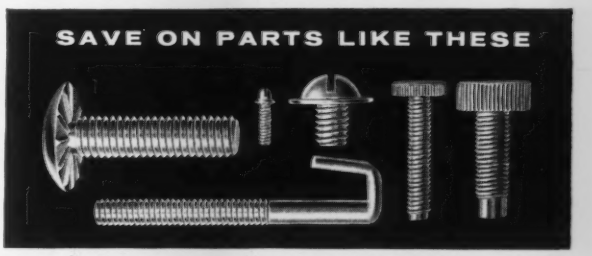


AMONG OPERATIONS PERFORMED BY PROGRESSIVE are heading and extruding simultaneously; flattening; piercing; drilling; bending; pointing; fluted or diamond knurling; trimming; turning tenons, shoulders or recesses; struck or sawed slotting; notching.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, 8M x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c, less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.00c per lb of Si. Packed, c.l. 22.65c, ton lot 23.95c, less ton 24.95c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing min 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.60c per lb of alloy; ton lot, packed, 10.95c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3⅝ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per lb of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots, $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lot $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

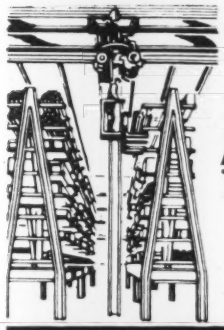
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorous: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base); carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.



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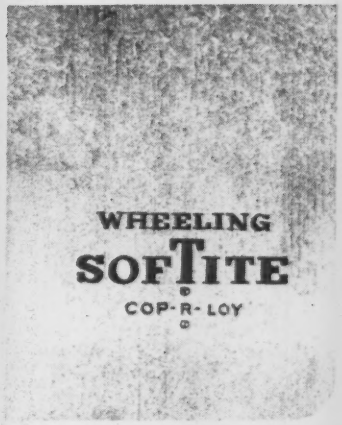

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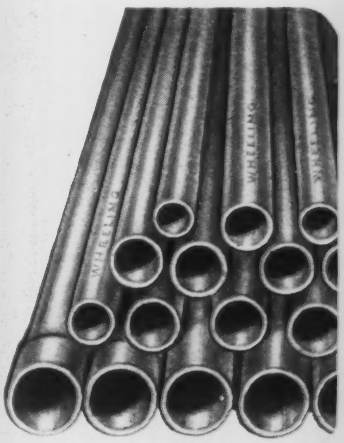

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WHEELING STEEL

Scrap Is Holding in Slow Market

STEEL's composite on the prime grade is unchanged at $42.67 as steelmakers limit their purchases. Rising ingot rate promises early resumption of active mill buying

Scrap Prices, Page 250

Chicago—Although the market has been surprisingly quiet the last ten days or so, sentiment is a shade stronger. There still has been no test to determine the validity of quotations considered as representative. But prospects are promising for a test within a week or ten days.

The district steelmaking rate fell 9 points below the projected figure recently because of the 48-hour wildcat strike at Inland Steel Co., and the current rate of 74.5 per cent is 2 to 3 points off while recovery at the plant is underway.

Progress in auto industry wage contract talks is a favorable influence which could snowball if an agreement can be reached.

Foundry demand for scrap is slightly better.

New York—Except for a $1 advance in short shoveling turnings to $14-$15, brokers' buying prices are unchanged. General steadiness is attributed more to export inquiry than to domestic demand, which has failed to pick up this month to the extent that had been expected.

European purchases for the fourth quarter have not yet developed, but fairly substantial orders are anticipated.

Philadelphia — While prices are unchanged, orders continue small and sellers appear a little more disposed to trade at the current levels. Whether this marks the end of the uptrend remains to be seen.

Western continental European countries are talking of further purchases from this country. One report is that they are considering outside purchases of around 250,000 tons for delivery in the fourth quarter. Some of this tonnage may be purchased from England, which recently lifted its ban on scrap exports.

Pittsburgh—Brokers' bids on railroad scrap give little indication of where the market is headed. The New York Central's No. 1 heavy melting grade brought $47 a ton, 25 cents more than a month ago. Baltimore & Ohio's scrap sold for $1 less than last month.

Dealers think the market will spurt if the automakers reach a settlement with Walter Reuther, since high level steel production would be assured through the fourth quarter.

Cleveland—The local market is quiet, but rising steelmaking operations provide promise of broader demand over coming weeks. The district ingot rate last week went up 6 points to 54.5 per cent of capacity. At Youngstown, the steel operating rate went up 8 points to 58 per cent.

Youngstown—Steel operations are being watched closely by brokers and dealers. The trend in production will point the way for scrap prices over coming weeks. No new

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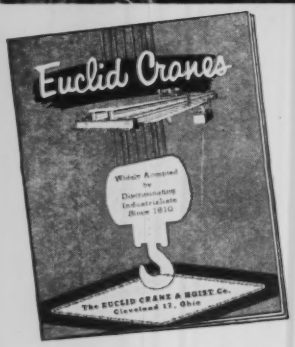

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STEELMAKING SCRAP PRICE COMPOSITE
Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.
1957
1958
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
Sept. 10 1958 $42.67
Week Ago $42.67
Month Ago $41.33
Year Ago $50.17
Aug. Avg. $41.58

orders have been placed here recently, last sales of No. 1 heavy melting being made in August at $43. Brokers have been shaving their buying prices since late August.

Buffalo—The market is quiet and prices are unchanged despite a steady increase in district steel operations. The mills are well supplied with scrap and are not reaching out for tonnage. They are confining purchases almost entirely to No. 2 heavy melting and No. 2 bundles. What No. 1 material they are taking is almost wholly of industrial origin. Blast furnace scrap is also quiet, though pig iron production is rising. The turnings market continues sluggish.

Detroit—The market is lethargic. Dealers and brokers indicate this situation will continue until some action breaks in auto contract talks. McLouth Steel is reported to have placed a small order of bundles at $37 on track, but the market fell back after the deal. Mill and dealer inventories are high, and little scrap is being generated.

Cincinnati — Brokers are filling first-of-the-month mill orders, but the market picture generally is dull. Continued steadiness is anticipated in most grades as district steelmaking operations are still heading upward, indicating heavier consumption. Little activity is reported in the foundry grades.

St. Louis—The market is steady. Shipments are good and it appears as though level business is in prospect. Steelmaking operations are edging higher, and local production will not be affected too much in event of an auto strike.

Birmingham—With cast pipe production rising, demand for cast iron scrap is reported active with prices steady. Some electric furnace scrap is moving fairly well, but the largest district buyer of this grade is out of the market. Open hearth scrap consumers have failed to make anticipated post-Labor Day purchases.

Houston—Trading is quiet, and prices are under little influence from any direction. With supply fairly tight, brokers are moving slowly in filling a moderate 45-day order for the Houston steel mill.

The Mexican market continues to generate higher prices. Brokers are paying $45 for No. 1 heavy melting, delivered to Laredo, Tex., and $42 for the No. 2 grade.

Seattle — Scrap prices are unchanged at $30 for No. 1 and $28 for No. 2 heavy melting. Buying is limited. Mill inventories are ample.

San Francisco—The local market is having a hard time snapping out of the doldrums.

Los Angeles—Prices on some of the lesser grades of scrap have advanced the last week or so, but No. 2 bundles are off $3 a ton to $17.

Pig Iron . . .

Pig Iron Prices, Page 243

Post-Labor Day activity in merchant pig iron has shown little, if any, gain. Demand is expected to improve this month following the disappointing volume of orders booked in the first two weeks.

Higher production of automotive castings is one stimulating influence. In foundries serving other industries, operations continue to lag.

Hanna Furnace Corp. will blow in a second blast furnace at Buffalo this week, increasing its operations from 30 per cent to about 55 per cent of capacity. The firm reports a pickup in business.

Republic Steel Corp. relighted a blast furnace at Cleveland early this month, bringing the number producing at that plant to three out of six.

Distributors . . .

Prices, Page 243

Steel service centers in the Pittsburgh area have raised their base prices $6.60 a ton on plates, $7.80 on hot-rolled bars, and $7.20 on structurals. To make large orders more attractive, they've revised their quantity discounts. Result: Volume buyers pay less for steel than they did before base prices were increased.

Similar action is being taken in other districts. Most distributors in the Los Angeles area are absorbing at least some of the recent price hike posted by steel mills.

Talk in late August about possibly revamping the higher price schedule posted earlier in the month in Houston has quieted. It now appears that the higher prices will hold despite continued pressure from importers.

Warehouse sales have increased, especially in plates and structurals.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 244

Rising production of pig iron, is reflected in a stepping up of operations at coke ovens.

Donner-Hanna Coke Corp., which supplies the Hanna furnace and Republic Steel plants at Buffalo, is increasing coke production from 41 per cent of capacity to about 55 per cent.

Youngstown Sheet & Tube Co., Boardman, Ohio, is cleaning up wreckage in a part of its Campbell Works coke plant which was hit by lightning, resulting in an ex-

(*Please turn to Page* 255)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Sept. 10, 1968. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Sept. 10	$42.67
Sept. 3	42.67
Aug. Avg.	41.58
Sept. 1957	47.73
Sept. 1953	36.95

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	42.00-43.00
No. 2 heavy melting	34.00-35.00
No. 1 dealer bundles	42.00-43.00
No. 2 bundles	*31.00-32.00*
No. 1 busheling	42.00-43.00
No. 1 factory bundles	47.00-48.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals:	
2 ft and under	*49.00-50.00*
3 ft lengths	*48.00-49.00*
Heavy turnings	41.00-42.00
Punchings & plate scrap	*49.00-50.00*
Electric furnace bundles	*49.00-50.00*

Cast Iron Grades

No. 1 cupola	43.00-44.00
Stove plate	41.00-42.00
Unstripped motor blocks	23.00-24.00
Clean auto cast	39.00-40.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	*48.00-49.00*
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Random rails	54.00-55.00
Railroad specialties	*52.00-53.00*
Angles, splice bars	*52.00-53.00*
Rails, rerolling	60.00-61.00

Stainless Steel Scrap

18-8 bundles & solids	220.00-225.00
18-8 turnings	115.00-120.00
430 bundles & solids	120.00-125.00
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt, indus.	46.00-47.00
No. 1 hvy melt, dealer	44.00-45.00
No. 2 heavy melting	37.00-38.00
No. 1 factory bundles	50.00-51.00
No. 1 dealer bundles	44.00-45.00
No. 2 bundles	31.00-32.00
No. 1 busheling, indus.	46.00-47.00
No. 1 busheling, dealer	44.00-45.00
Machine shop turnings	22.00-23.00
Mixed borings, turnings	24.00-25.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals, 3 ft.	49.00-50.00
Punchings & plate scrap	50.00-51.00

Cast Iron Grades

No. 1 cupola	46.00-47.00
Stove plate	44.00-45.00
Unstripped motor blocks	39.00-40.00
Clean auto cast	52.00-53.00
Drop broken machinery	52.00-53.00

Railroad Scrap

No. 1 R.R. heavy melt.	49.00-50.00
R.R. malleable	57.00-58.00
Rails, 2 ft and under	60.00-61.00
Rails, 18 in. and under	61.00-62.00
Angles, splice bars	56.00-57.00
Axles	*70.00-71.00*
Rails, rerolling	*65.00-66.00*

Stainless Steel Scrap

18-8 bundles & solids	210.00-215.00
18-8 turnings	110.00-115.00
430 bundles & solids	110.00-115.00
430 turnings	65.00-70.00

YOUNGSTOWN

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	30.00-31.00
No. 1 busheling	43.00-44.00
No. 1 bundles	43.00-44.00
No. 2 bundles	30.00-31.00
Machine shop turnings	15.00-16.00
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	45.00-46.00
Electric furnace bundles	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00

CLEVELAND

No. 1 heavy melting	39.50-40.50
No. 2 heavy melting	26.00-27.00
No. 1 factory bundles	*44.00-45.00*
No. 1 bundles	39.50-40.50
No. 2 bundles	28.00-29.00
No. 1 busheling	39.50-40.50
Machine shop turnings	14.00-15.00
Short shovel turnings	*20.00-21.00*
Mixed borings, turnings	*20.00-21.00*
Cast iron borings	*20.00-21.00*
Cut foundry steel	41.00-42.00
Cut structurals, plates 2 ft and under	*46.00-47.00*
Low phos. punchings & plate	41.00-42.00
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	40.50-41.50

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	37.00-38.00
Heavy breakable cast	36.00-37.00
Stove plate	*43.00-44.00*
Unstripped motor blocks	32.00-33.00
Brake shoes	36.00-37.00
Clean auto cast	49.00-50.00
Burnt cast	33.00-34.00
Drop broken machinery	49.00-50.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	49.00-50.00
Railroad specialties	50.00-51.00
Uncut tires	43.00-44.00
Angles, splice bars	50.00-51.00
Rails, rerolling	56.00-57.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	185.00-190.00
18-8 turnings	100.00-105.00
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	38.00
No. 2 heavy melting	36.00
No. 1 bundles	40.00
No. 2 bundles	29.00
No. 1 busheling	40.00
Machine shop turnings	20.00†
Short shovel turnings	22.00†

Cast Iron Grades

No. 1 cupola	47.00
Charging box cast	39.00
Heavy breakable cast	38.00
Unstripped motor blocks	39.00
Clean auto cast	48.00
Stove plate	45.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00
Rails, 18 in. and under	52.00
Rails, random lengths	47.50
Rails, rerolling	61.00
Angles, splice bars	47.00

BIRMINGHAM

No. 1 heavy melting	35.00-36.00*
No. 2 heavy melting	30.00-31.00*
No. 1 bundles	35.00-36.00*
No. 2 bundles	*23.00-24.00*
No. 1 busheling	35.00-36.00*
Cast iron borings	12.00-13.00
Machine shop turnings	24.00-25.00
Short shovel turnings	25.00-26.00
Bars, crops and plates	46.00-47.00
Structurals & plates	44.00-45.00
Electric furnace bundles	39.00-40.00
Electric furnace:	
2 ft and under	38.00-39.00
3 ft and under	37.00-38.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	53.00-54.00
Unstripped motor blocks	42.00-43.00
Charging box cast	22.00-23.00
No. 1 wheels	39.00-40.00

Railroad Scrap

No. 1 R.R. heavy melt.	39.00-40.00
Rails, 18 in. and under	51.00-52.00
Rails, rerolling	59.00-60.00
Rails, random lengths	46.00-47.00
Angles, splice bars	47.00-48.00

PHILADELPHIA

No. 1 heavy melting	40.00
No. 2 heavy melting	36.00
No. 1 bundles	40.00
No. 2 bundles	25.00
No. 1 busheling	40.00
Electric furnace bundles	41.00
Mixed borings, turnings	20.00-21.00†
Short shovel turnings	23.00-24.00
Machine shop turnings	20.00-21.00
Heavy turnings	34.00
Structurals & plate	42.00-44.00
Couplers, springs, wheels	45.50†
Rail crops, 2 ft & under	57.00-58.00

Cast Iron Grades

No. 1 cupola	40.00
Heavy breakable cast	42.00
Malleable	58.00-59.00
Drop broken machinery	48.00-50.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	29.00
No. 1 bundles	32.00-33.00
No. 2 bundles	19.00-20.00
Machine shop turnings	10.00-11.00
Mixed borings, turnings	11.00-12.00
Short shovel turnings	*14.00-15.00*
Low phos. (structurals & plates)	35.00-36.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	28.00-29.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	175.00-180.00
18-8 borings, turnings	70.00-75.00
410 sheets, clips, solids	50.00-55.00
430 sheets, clips, solids	70.00-75.00

BUFFALO

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	34.00-35.00
No. 2 bundles	27.00-28.00
No. 1 busheling	34.00-35.00
Mixed borings, turnings	17.00-18.00
Machine shop turnings	14.00-15.00
Short shovel turnings	19.00-20.00
Cast iron borings	17.00-18.00
Low phos. structurals and plate, 5 ft and under	39.00-40.00
2 ft and under	43.00-44.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	40.00-41.00
No. 1 machinery	44.00-45.00

Railroad Scrap

Rails, random lengths	53.00-54.00
Rails, 3 ft and under	59.00-60.00
Railroad specialties	43.00-44.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	38.50-39.50
No. 2 heavy melting	32.50-33.50
No. 1 bundles	38.50-39.50
No. 2 bundles	25.00-26.00
No. 1 busheling	38.50-39.50
Machine shop turnings	18.00-19.00
Mixed borings, turnings	17.00-18.00
Short shovel turnings	20.00-21.00
Cast iron borings	17.00-18.00
Low phos. 18 in.	42.00-43.00

Cast Iron Grades

No. 1 cupola	42.00-43.00
Heavy breakable cast	34.00-35.00
Charging box cast	34.00-35.00
Drop broken machinery	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	42.00-43.00
Rails, 18 in. and under	53.00-54.00
Rails, random lengths	43.00-44.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	38.00
No. 2 heavy melting	33.00
No. 2 bundles	24.00
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	42.00

Cast Iron Grades

No. 1 cupola	45.00
Heavy breakable	30.00†
Foundry malleable	38.00
Unstripped motor blocks	36.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	27.00
No. 2 heavy melting	22.50
No. 1 bundles	27.00
No. 2 bundles	21.00
No. 1 busheling	27.00
Machine shop turnings	*8.00-9.00*
Short shovel turnings	*10.00-11.00*
No. 1 cast	*33.00-34.00*
Mixed cupola cast	*33.00-34.00*
No. 1 machinery cast	36.00-38.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*32.00-33.00*
No. 2 heavy melting	*21.00-22.00*
No. 1 bundles	33.00-34.00
No. 2 bundles	20.00-21.00
No. 1 busheling	*31.00-32.00*
Machine shop turnings	9.00-10.00
Mixed borings, turnings	10.00-11.00
Short shovel turnings	11.00-12.00
Punchings & plate	32.00-33.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Stove plate	27.00-28.00
Charging box cast	27.00-28.00
Heavy breakable	26.00-27.00
Unstripped motor blocks	16.00-17.00
Clean auto cast	37.00-38.00

SEATTLE

No. 1 heavy melting	30.00†
No. 2 heavy melting	28.00†
No. 1 bundles	22.00†
No. 2 bundles	20.00†
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable cast	28.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	*17.00*
Machine shop turnings	11.00
Shoveling turnings	*13.00*
Cast iron borings	*13.00*
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*39.00*

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory:	
Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

*Brokers' buying price.
†Nominal.
‡F.o.b. Hamilton, Ont.

THE NEW LOGEMANN MODEL 500-PF HIGH SPEED SCRAP PRESS

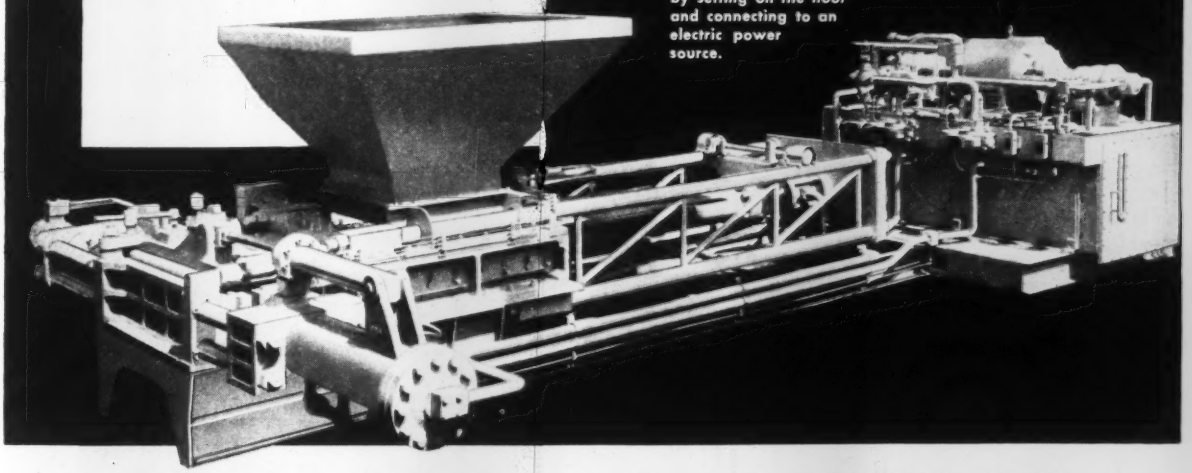
FAST LOADING! FAST BALING! FAST DISCHARGE!

Here is a two-compression, side-ejection press designed for high production — up to 240 bales per hour.

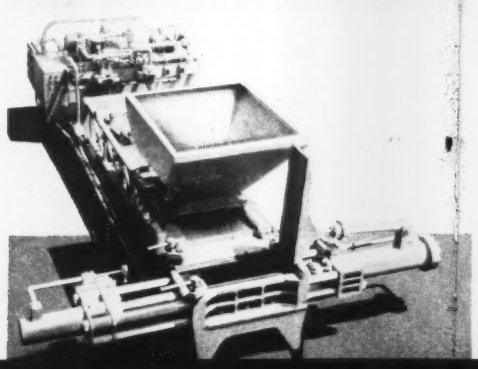
It is able to bale sheet clips, stamping skeletons, wire, cans, steel, copper, brass and aluminum scrap.

The **LOGEMANN Model 500-PF** press is a high-speed, high-density horizontal two compression unit. It is filled from a hopper supermounted above the compression box and discharges the compressed bale through a side opening. The operating cycle is automatic and continuous, or manual at the option of the operator.

No pit required for installation. Can be operated by setting on the floor and connecting to an electric power source.



BALE SIZE	**6" x 12" x 8" (VARIABLE)**
BALE WEIGHT	**40 LBS. AVERAGE**
PRODUCTION	**UP TO 240 BALES PER HOUR**



Designed for HIGH PRODUCTION

Here is a new high speed scrap press . . . geared for high production and extra baling profits for you. Famous "engineered" features, proved through actual operation, are built into this press to give you constant, uninterrupted service. It's a top-loading side-ejection press that can handle a variety of scrap. Write for the new Bulletin No. 220; it will give you complete information concerning design, pumping unit, valve assembly and accessory equipment. When making your inquiries please state the nature of your scrap and the tonnage desired.

LOGEMANN BROTHERS CO.

3126 W. BURLEIGH STREET • MILWAUKEE 45, WISCONSIN

Diecasting Sales Better

Some improvement is reported but demand is still under last year's. Hopes for fourth quarter upsurge would disappear in the event of a prolonged auto strike

Nonferrous Metal Prices, Pages 254 & 255

DIECASTING sales have been inching upward since early summer but the bulk of the nation's shops are still hungry for business. First half production ran 40 per cent under the corresponding period of 1957, primarily because demand from the automotive and appliance industries (the two largest diecasting users) was lacking, says the American Die Casting Institute Inc.

Upswing — While August and September sales have shown a rise, the industry is looking to the fourth quarter as the time to make cash registers jingle. Major reason: The hoped for spurt in demand from Detroit. Producers also believe they will see increased buying from makers of appliances, business machines, motors, and the like.

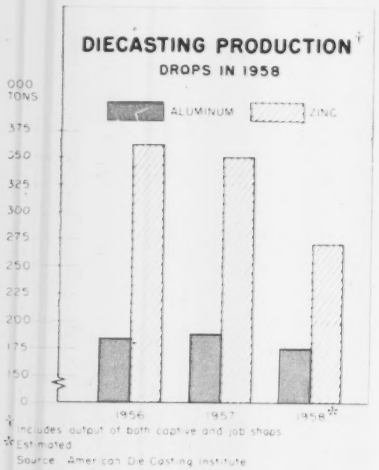
At its annual meeting in Chicago last week, the ADCI predicted 270,000 tons of zinc diecastings will be produced this year, compared with 351,500 tons last year (see chart). Aluminum isn't expected to drop as much: 175,000 tons, vs. 188,250 tons in 1957.

The Hitch — Those predictions are pretty much built around a substantial upswing in auto orders. Many diecasters are afraid the 1959 models aren't going to bring too much business, though aluminum is expected to fare better than zinc. Another fear: If the specter of an auto strike should turn into a full-fledged bogeyman, predictions for a vastly improved quarter will be as cold as a tombstone in a blizzard.

In general, it looks like the fourth quarter will be kinder to aluminum than to zinc and to those producers not tied to the automotive market.

New York—Zinc producers say that while sales to diecasters are better than earlier in the year, they're running substantially under a year ago. One indication: The American Zinc Institute Inc. reports production of special high grade through August was 199,362 tons, compared with 240,355 tons in 1957.

Diecasters in the area report some pickup since June, especially in orders from appliance and business machine makers. They hope for a substantial upturn in the fourth quarter. Most aren't as dependent on Detroit as firms in the Midwest.



Chicago—Central Die Casting & Mfg. Co. says sales to date are down 20 per cent from a year ago but expects the fourth quarter to show improvement. National Die Casting Co. is running at around year-ago levels, but expects improvement in the last quarter.

Leaner business has been accompanied by 10 to 20 per cent price reductions. "Customers are taking advantage of the situation by seeking more quotations on each job," says one producer.

Detroit—Says a diecasting sales manager: "We see a slight increase in our nonautomotive diecastings in the next year (they're now up 3 to 4 per cent over 1957). As far as automotive is concerned, we don't expect any sizable increase until the 1960 model year." Reason: "Zinc requirements on the 1959 models have been cut."

It's rumored General Motors Corp. has cut back at least 50 per cent on zinc requirements on '59s, and has nearly doubled the number of its suppliers.

Pittsburgh—Latrobe Die Casting Co. says sales are down around 10 per cent, but that business began to improve several weeks ago, especially from automotive and electrical apparatus manufacturers.

Pittsburgh Die Casting Co. reports a 30 per cent sales increase this year. Greatest improvement has been in aluminum. Says the firm: "Last year, our business was evenly divided between aluminum and zinc. This year, aluminum accounts for about 60 per cent."

Cleveland — Accurate Die Casting Co. says sales have been running 25 to 30 per cent under 1957's but that volume this month is close to the 1957 pace. Shipments to makers of gas meters, appliances, and electric motors are all on the upswing, says the company. Pressure Castings Inc. reports demand now is at year-ago levels though it

NONFERROUS PRICE RECORD

	Sept. 10 Price	Last Change	Previous Price	Aug. Avg	July Avg	Sept., 1957 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.700	24.000	26.000
Copper	26.25-26.50	Sept. 4, 1958	26.50	26.510	26.125	26.469
Lead	10.55	Aug. 13, 1958	10.80	10.646	10.800	13.800
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	94.625	Sept. 10, 1957	94.50	94.995	94.950	93.422
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

At Bristol

"run of the mill"

always means

Brass at its Best

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50; f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.55 per lb deld.

Cobalt: 97.99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 26.50 deld.; custom smelters, 26.25; lake, 26.50 deld.; fire refined, 26.25 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 10.55; chemical, 10.65; corroding, 10.65, St. Louis, New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $240-244 per 76-lb flask.

Molybdenum: Unalloyed turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $15-19 per troy oz.

Platinum: $62-65 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market 88.625 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot, 94.625; prompt, 94.50.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

Tungsten: Powder, 98.8%, carbon .reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 12.25; No. 2, 12.75; No. 5, 12.50 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.50-25.25; No. 12 foundry alloy (No. 2 grade), 21.50-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.75; grade 2, 21.50; grade 3, 20.50; grade 4, 17.75.

Brass Ingot: Red brass, No. 115, 27.00; tin bronze, No. 225, 36.00; No. 245, 30.75; high-leaded tin bronze, No. 305, 31.25; No. 1 yellow, No. 405, 22.75; manganese bronze, No. 421, 24.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.845, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.825, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 31.855; l.c.l., 32.48. Weatherproof, 20,000-lb lots, 33.66, l.c.l., 34.41, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $16.25 per cwt; pipe, full coils, $16.25 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Range, Thickness Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-63.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.80	46.70
0.011-0.0095	53.30	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	68.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.375	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ⅜ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70-60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 19.25-19.75; No. 2 heavy copper and wire, 17.25-17.75; light copper, 15.25-15.75; No. 1 composition red brass, 15.50-16.00; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 26.50c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	49.63b	46.86c	....	49.82	22.500	22.500	21.750
Yellow Brass	43.57	29.28d	44.11	46.48	17.000	16.750	15.250
Low Brass, 80%	46.03	45.97	46.57	48.84	19.000	18.750	18.250
Red Brass, 85%	46.89	46.83	47.43	49.70	19.750	19.500	19.000
Com. Bronze, 90%	48.30	48.24	48.84	50.86	20.625	20.375	19.875
Manganese Bronze	51.52	45.74	56.18	....	15.625	15.375	14.875
Muntz Metal	45.95	41.76	....	....	15.875	15.625	15.125
Naval Brass	47.83	42.14	54.89	50.99	15.625	15.375	14.875
Silicon Bronze	54.37	53.56	54.41	56.29	22.125	21.875	21.125
Nickel Silver, 10%	58.82	61.15	61.15	....	22.000	21.750	11.000
Phos. Bronze, A-5%	68.59	69.09	69.09	70.27	23.375	23.125	22.125

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 14.50-15.00; new brass clippings, 13.00-13.50; light brass, 9.25-9.75; heavy yellow brass 10.50-11.00; new brass rod ends, 11.00-11.50; auto radiators, unsweated, 11.50-12.00; cocks and faucets, 12.50-13.00; brass pipe, 12.50-13.00.

Lead: Heavy, 6.50-6.75; battery plates, 2.00-2.25; linotype and stereotype, 8.50-9.00; electrotype, 7.50-8.00; mixed babbitt, 9.00-9.50.

Monel: Clippings, 32.00-34.00; old sheets, 26.00-28.00; turnings, 20.00-23.00; rods, 32.00-34.00.

Nickel: Sheets and clips, 50.00-52.00; rolled anodes, 50.00-52.00; turnings, 37.00-40.00; rod ends, 50.00-52.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

Aluminum: Old castings and sheets, 9.50-10.00; clean borings and turnings, 6.00-6.50; segregated low copper clips, 13.00-13.50; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.75-13.25; mixed high copper clips, 11.50-12.00.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.00-15.50; mixed low copper clips, 15.50-16.00; mixed high copper clips, 15.00-15.50.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 9.25-10.00; clean borings and turnings, 8.50-9.00; segregated low copper clips, 13.50-14.00; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.00-12.50; mixed high copper clips, 11.00-11.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 52.50; light scrap, 47.50; turnings and borings, 32.50.

Copper and Brass: No. 1 heavy copper and wire, 21.50; No. 2 heavy copper and wire, 21.25; light copper, 19.00; refinery brass (60% copper) per dry copper content, 20.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 21.50; No. 2 heavy copper and wire, 20.75; light copper, 18.50; No. 1 composition borings, 18.00; No. 1 composition solids, 18.50; heavy yellow brass solids, 12.75; yellow brass turnings, 11.75; radiators, 14.50.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.55.
Copper: Flat-rolled, 43.03; oval, 14.50, 5000-10,000 lb; electrodeposited, 35.25, 2000-5000 lb lots; cast, 37.75, 5000-10,000 lb quantities.
Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.
Tin: Bar or slab, less than 200 lb, 113.50; 200-499 lb, 112.00; 500-999 lb, 111.50; 1000 lb or more, 111.00.
Zinc: Balls, 16.50; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.55 per lb in 100-lb drums.
Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.
Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.
Copper Sulphate: 100-1900 lb, 14.05; 2000-5900 lb, 12.05; 6000-11,900 lb, 11.80; 12,000-22,900 lb, 11.55; 23,000 lb or more, 11.05.
Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.
Nickel Sulphate: 5000-22,000 lb, 29.00; 23,000-35,900 lb, 28.50; 36,000 lb or more, 28.00.
Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.
Sodium Stannate: Less than 100 lb, 75.80; 100-600 lb, 66.80; 700-1900 lb, 64.00; 2000-9900 lb, 62.20; 10,000 lb or more, 60.80.
Stannous Chloride (anhydrous): 25 lb, 150.70; 100 lb, 145.90; 400 lb, 143.40; 800-19,900 lb, 102.60; 20,000 lb or more, 96.50.
Stannous Sulphate: Less than 50 lb, 136.10; 50 lb, 106.10; 100-1900 lb, 104.10; 2000 lb or more, 102.10.
Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 249)

plosion and fire. The coke plant was completely knocked out. The six coke batteries had to be taken out and natural gas utilized to protect them against too rapid cooling.

Sheet & Tube immediately started up its idle coke battery at the Brier Hill Works. It got two of the Campbell units back into production within a few days of the fire to furnish coke for three blast furnaces.

The plant is handicapped by inability to pipe in all the natural gas needed, and the company is staggering finishing operations over seven days weekly to keep production flowing smoothly.

One of the oldest coal mines in Alabama, the Praco of the Alabama By-Products Co., in Jefferson County, closes down Sept. 26 after more than 50 years in production. The company is considering opening another mine in the area. For many years, Praco was one of the chief suppliers of locomotive steam coal, and of coking coal for the company's byproduct ovens at Tarrant, Ala. In recent years, the mine's full output has been coking coal. Now, coal for the coking plant will be supplied from the company's Labuco mine.

Ferroalloys . . .

Ferroalloy Prices, Page 246

Vanadium Corp. of America, New York, announces price adjustments on some grades of high carbon ferrochromium alloys, effective Oct. 1. Increases vary from $0.0075 to $0.0400 per pound of contained chromium, bringing them in line with costs and re-establishing prices at approximately the same level as those in effect at the start of the year. No change in the price of the standard grade of high carbon ferrochromium is proposed at present.

The new base prices for the high carbon ferrochromium alloys are: Iron foundry FeCr, $0.3080, up $0.0075; standard HCFeCr 4/6%, $0.2875, unchanged; FeCr 63, $0.2825, up $0.0075; FeCr intermediate grade, $0.2650, up $0.0400; FeCr 55 charge grade, $0.2575, up $0.0375. The prices are per pound of chromium contained, and apply to all sizes and quantities.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 241

New discount lists have been issued by various industrial fastener producers. In some instances, they represent a reduction in prices; in others, increases.

The new price structure for bolts and nuts reflects changes that have taken place in customers' requirements, such as increased demand for hex and hex products.

Two changes are noteworthy:

In bolts, the former hex head and finished nut (regular hex sizes 7/8 in. and larger) extras for the machine bolt line are withdrawn. A new market for bulk square and hex bolts simplifies pricing of those items, the market being based on full bulk shipping containers, not on case lot quantities.

In hex nuts, quantity brackets now cover pricing of single container orders, multiple container orders, and large volume orders of 50 containers and more.

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COKE OVEN
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Well established corporation operating blast furnaces and coke ovens in Alabama needs technically trained and experienced supervisors capable of qualifying in short time for high-level management positions at both blast furnace and coke oven plants. Submit full resume. All replies strictly confidential. Reply Box 687, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

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Age 32. Degree in Personnel Management. 7 years experience in all phases of personnel—steel manufacturing and retail. Excellent experience in Industrial Relations. Reply Box 689, STEEL, Penton Bldg., Cleveland 13, Ohio.

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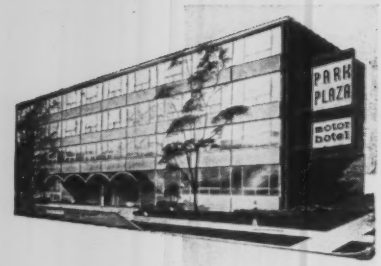

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Advertising Index

Acme-Newport Steel Co. 226
Ajax Engineering Corporation 17
Alan Wood Steel Co. 130
Allegheny Ludlum Steel Corporation 86
Allied Chemical Corporation, General Chemical Division 83
Allis-Chalmers 79
Amchem Products, Inc. 202
American Brass Co., The 211
American Messer Corporation 160, 161
American Optical Co., Safety Products Division 72
American Pulverizer Co. 214
American Steel Warehouse Association 82
Anaconda Wire & Cable Co. 186, 187
Arcos Corporation 232, 233
Armco Steel Corporation 100
Aronson Machine Co. 196
Associated Spring Corporation 84
Association of Iron & Steel Engineers 127
Atlas Car & Mfg. Co., The 10
Avondale Marine Ways, Inc. 205

Babcock & Wilcox Co., The, Tubular Products Division . . . . . Inside Front Cover
Bailey Meter Co. 138
Baker Brothers, Inc. 143, 144, 145
Baltimore & Ohio Railroad 116
Barber-Colman Co. 198, 199
Barnes, Wallace, Co., The, Ltd., Division Associated Spring Corporation 84
Barnes, Wallace, Division, Associated Spring Corporation 84
Barnes, Wallace, Steel Division, Associated Spring Corporation 84
Bay State Abrasive Products Co. 132, 133
Behr-Manning Co., A Division of Norton Co. 189
Bethlehem Steel Co. 1
B-G-R Division, Associated Spring Corporation 84
Bishop, J., & Co. Platinum Works 64
Blaw-Knox Co. 25, 26, 27, 28
Bliss, E. W., Co., Rolling Mill Division . . 20, 21
Bristol Brass Corporation, The 253
Browning, Victor R., & Co., Inc. 145
Buell Engineering Co., Inc. 176
Buffalo Forge Co. 95
Bullard Co., The 35
Byers, A. M., Co. 129

Cambridge Wire Cloth Co., The 216
Campbell Chain Co. 219
Carpenter Steel Co., The 215
Chambersburg Engineering Co. 36
Chandler Products Corporation 204
Chicago Tramrail Corporation 247
Cincinnati Lathe & Tool Co. 23
Cincinnati Milling Machine Co., The, Cincinnati Milling Products Division 94
Cincinnati Shaper Co., The 14, 15
Cities Service Oil Co. 45
Clark Controller Co., The 8, 9
Cleveland Crane & Engineering Co., The . . 66
Cleveland Hotel 194
Cleveland Metal Abrasive Co. 90
Colorado Fuel & Iron Corporation, The . . 33, 77
Columbia-Geneva Steel Division, United States Steel Corporation 67
Commercial Shearing & Stamping Co. 2
Continental Steel Corporation 212
Coolidge Corporation 123
Copperweld Steel Co., Ohio Seamless Tube Division 70
Copperweld Steel Co., Superior Steel Division 201
Crucible Steel Company of America 93

De Laval Steam Turbine Co. 213
Detroit Stamping Co. 122
DeVilbiss Co., The 34
Dravo Corporation 234
Dreis & Krump Manufacturing Co. 12

Dunbar Brothers Division, Associated Spring Corporation 84
Du Pont, E. I., de Nemours & Co., Inc. . . 80, 81
Duraloy Co., The 142
Dykem Co., The 245

Eastern Stainless Steel Corporation 170, 171
Easton Car & Construction Co. 203
Edgewater Steel Co. 139
Electric Control Systems Division of Stromberg-Carlson Co. 32
Electric Equipment Co. 255
Electric Steel Foundry Co. 75
Electro Metallurgical Co., Division of Union Carbide Corporation 88
Elwell-Parker Electric Co., The 7
Euclid Crane & Hoist Co., The 248
Eureka Fire Brick Works 235

Farrel-Birmingham Co., Inc. 190
Farval Corporation, The . . . . . Inside Back Cover
Federal-Mogul-Bower Bearings, Inc., Federal-Mogul Division 223
Federal-Mogul Division, Federal-Mogul-Bower Bearings, Inc. 223
Feller Engineering Co. 167
Fellows Gear Shaper Co., The 60
Femco, Inc. 169
Finkl, A., & Sons Co. 168
Firth Sterling, Inc. 55
Fischer Special Mfg. Co. 131
Foote Bros. Gear & Machine Corporation . . 158
Formica Corporation 13
Foster, L. B., Co. 255

Garlock Packing Co., The 61
General American Transportation Corporation, Parker-Kalon Division 258
General Chemical Division, Allied Chemical Corporation 83
General Electric Co. 162, 163, 164
General Electric Co., Metallurgical Products Department 208, 209
General Refractories Co. 185
General Steel Castings Corporation, National Roll & Foundry Division 11
Gibson Division, Associated Spring Corporation 84
Globe Brick Co., The 230
Goodyear Tire & Rubber Co., Inc., The, Industrial Products Division 4
Gould-National Batteries, Inc. 54
Great Lakes Carbon Corporation, Electrode Division 137
Green River Steel Corporation 228
Greenlee Bros. & Co. 78
Gulf Oil Corporation 30, 31

Hamilton Foundry & Machine Co., The 165
Harrington & King Perforating Co., Inc., The 245
Hawkridge Metals Corporation 235
Heresite & Chemical Co. 159
Hill Acme Co., The 56
Hobart Brothers Co. 3
Hough, Frank G., Co., The 44
Hydraulic Press Mfg. Co., The, A Division of Koehring Co. 50

Indiana Steel & Wire Co., Inc. 245
Inland Steel Co. 221
International Nickel Co., Inc., The 96

Jones & Laughlin Steel Corporation 182, 183

Kaiser Aluminum & Chemical Sales, Inc., Kaiser Chemicals Division 225
Kinnear Mfg. Co., The 174
Koehring Co., The Hydraulic Press Mfg. Co. Division 50

Laclede Steel Co. 177
Ladish Co. 53
La Salle Steel Co. 57
Leeds & Northrup Co. 135
Lindberg Engineering Co. 140, 141
Linde Co., Division of Union Carbide Corporation 68
Link-Belt Co. 65
Lodge & Shipley Co., The 207
Logemann Brothers Co. 251

McKay Machine Co., The 74

Manross, F. N., & Sons Division, Associated Spring Corporation 84
Mattison Machine Works 184
May-Fran Engineering, Inc. 210
Mesta Machine Co. ..... Back Cover
Metal Processing Machine Co., The 74
Metallurgical Products Department of General Electric Co. 208, 209
Michigan Tool Co. 46
Milwaukee Division, Associated Spring Corporation 84
Monarch Machine Tool Co., The 62, 63
Morgan Construction Co. 111
Morse Chain Co. 48, 49
Mundt, Charles, & Sons 257

National Roll & Foundry Division, General Steel Castings Corporation 11
National-Standard Co. 43
National Steel Corporation 37
Nicholson File Co. 22
Northern Engineering Works 175
Norton Co. 71
Norton Co., Behr-Manning Co. Division 189

Oakite Products, Inc. 206
Ohio Division, Associated Spring Corporation 84
Ohio Seamless Tube Division of Copperweld Steel Co. 70
Ohio Steel Foundry Co., The 124

Pacific Tube Co. 134
Pangborn Corporation 89
Park Plaza Motor Hotel 256
Parker-Kalon Division, General American Transportation Corporation 258
Peterson Steels, Inc., Strip Steel Division .. 155
Pollock, William B., Co., The 87
Precision Steel Warehouse, Inc. 203
Progressive Mfg. Co., The, Division of The Torrington Co. 245

Raymond Manufacturing Division, Associated Spring Corporation 84
Republic Steel Corporation 18, 19
Roebling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation 33
Rollway Bearing Co., Inc. 29
Rolock, Inc. 218

Sandvik Steel, Inc. 195
Schatz Manufacturing Co., The 76
Scott Paper Co. 69
Seaboard Pacific Division, Associated Spring Corporation 84
Selas Corporation of America 180, 181
Shenango Furnace Co., The, Centrifugally Cast Products Division 136
Shepard Niles Crane & Hoist Corporation .. 220
Signode Steel Strapping Co. 59
Square D Co. 197
Stamco, Inc. 112
Sterling National Industries, Inc. 196
Stromberg-Carlson Co., Electronic Controls System Division 32
Struthers Wells Corporation, Titusville Forge Division 119
Sun Oil Co., Industrial Products Department.. 51
Sun Ship Building & Dry Dock Co. 217
Superior Steel Division of Copperweld Steel Co. 201
Swindell-Dressler Corporation 192, 193

Taylor, S. G., Chain Co., Inc. 16
Tennessee Coal & Iron Division, United States Steel Corporation 67
Thermal Research & Engineering Corporation 200
Thomas Flexible Coupling Co. 224
Timken Roller Bearing Co., The, Steel & Tube Division 120
Titusville Forge Division, Struthers Wells Corporation 119
Torrington Co., The 99
Torrington Co., The, The Progressive Mfg. Co. Division 245
Torrington Manufacturing Co., The 222
Treadwell Engineering Co. 40

Udylite Corporation, The 85
Union Carbide Corporation, Electro Metallurgical Division 88
Union Carbide Corporation, Linde Division.. 68
United Engineering & Foundry Co. 91
United States Steel Corporation, Subsidiaries 38, 39, 47, 67
United States Steel Export Co. 67

Vanadium Corporation of America 58
Vaughn Machinery Co., The 157
Virginia Electric & Power Co. 92

Walsh Refractories Corporation 6
Washburn Wire Co. 24
Wean Engineering Co., Inc., The 73
Webb Corporation, The 231
Weirton Steel Co. 37
Westinghouse Electric Corporation, Sturtevant Division 42
Wheeling Steel Corporation 247
Wheland Co., The 235
Whitehead Metal Products Co., Inc. 166
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation 77
Wrought Washer Mfg. Co. 102

Yoder Co., The 52
Youngstown Sheet & Tube Co., The 41

Table of Contents, Page 5

Classified Advertising, Page 255

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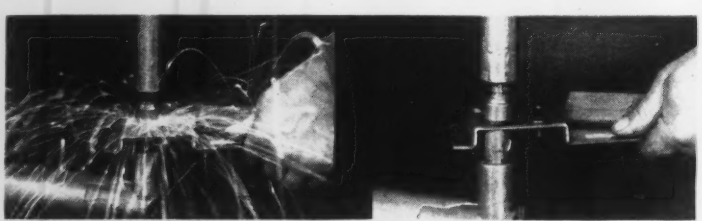
The new rim minimizes "flash" and "spatter". Finished work is cleaner, neater—shows no burn or discoloration. And operators like the new protection. The RIMGUARD requires less current, limits the amount of pressure applied during the fusion stage, controls the flow of the fused projections, and reduces the possibility of "flower-out" or "blow-out".

Try the new P-K RIMGUARD WELD SCREW for yourself. You'll find the new 4-Projection design assures proper weld area, develops the full strength of the weld with both thin and heavy gage steels. The RIMGUARD gives better seating of the head against the work. Openings between head and work are eliminated, thus providing protection against moisture condensation and corrosion—a distinct advantage where work is to be enameled or porcelainized.

P-K RIMGUARD WELD SCREWS* **are available from your nearby Industrial Distributor** *in Type WS-T with projections on top the head and Type WS-U with projections under the head. Sizes or finishes other than stock items can be supplied on special order. P-K Field Engineers will be glad to help solve unusual application problems.*



Welding operation with ordinary weld screw. Note flash and spatter—a hazard to personnel and a source of discoloration.

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No. 218

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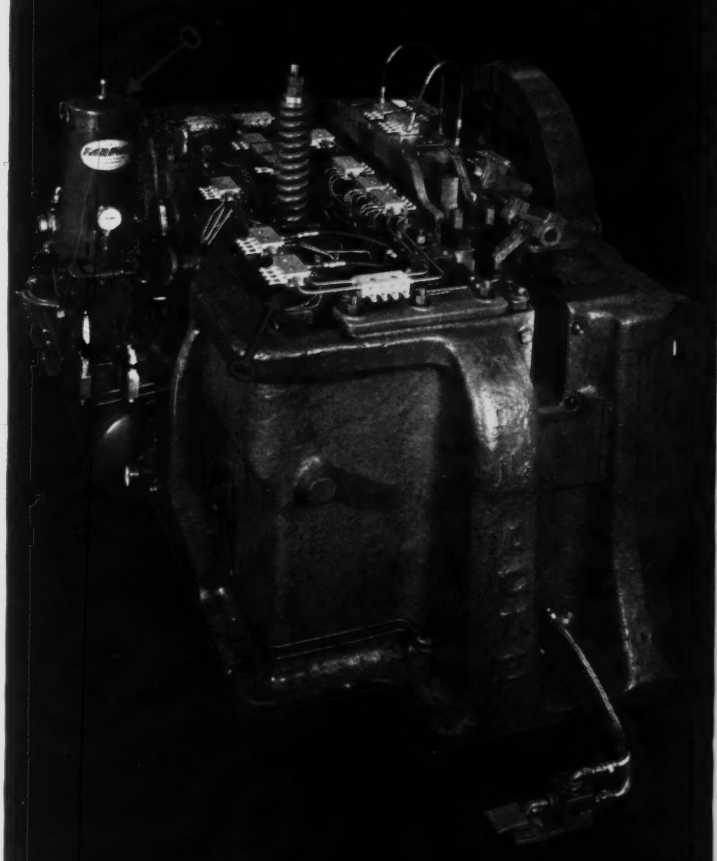
BUILDING peak performance into their machines is a point-of-pride with Hill-Acme. That's why you'll find Farval lubrication systems on H-A machines such as this upsetter.

When the going's rugged, with shock, vibration and wear trying to take their toll, Farval continuously guards 59 vital bearings . . . continuously delivers measured amounts of lubricant at regular intervals.

More and more, machine designers, engineers and production men are turning to Farval for the kind of lubrication that spells uninterrupted, maintenance-free production. Let us tell you more. Write for Bulletin 26-S. The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.



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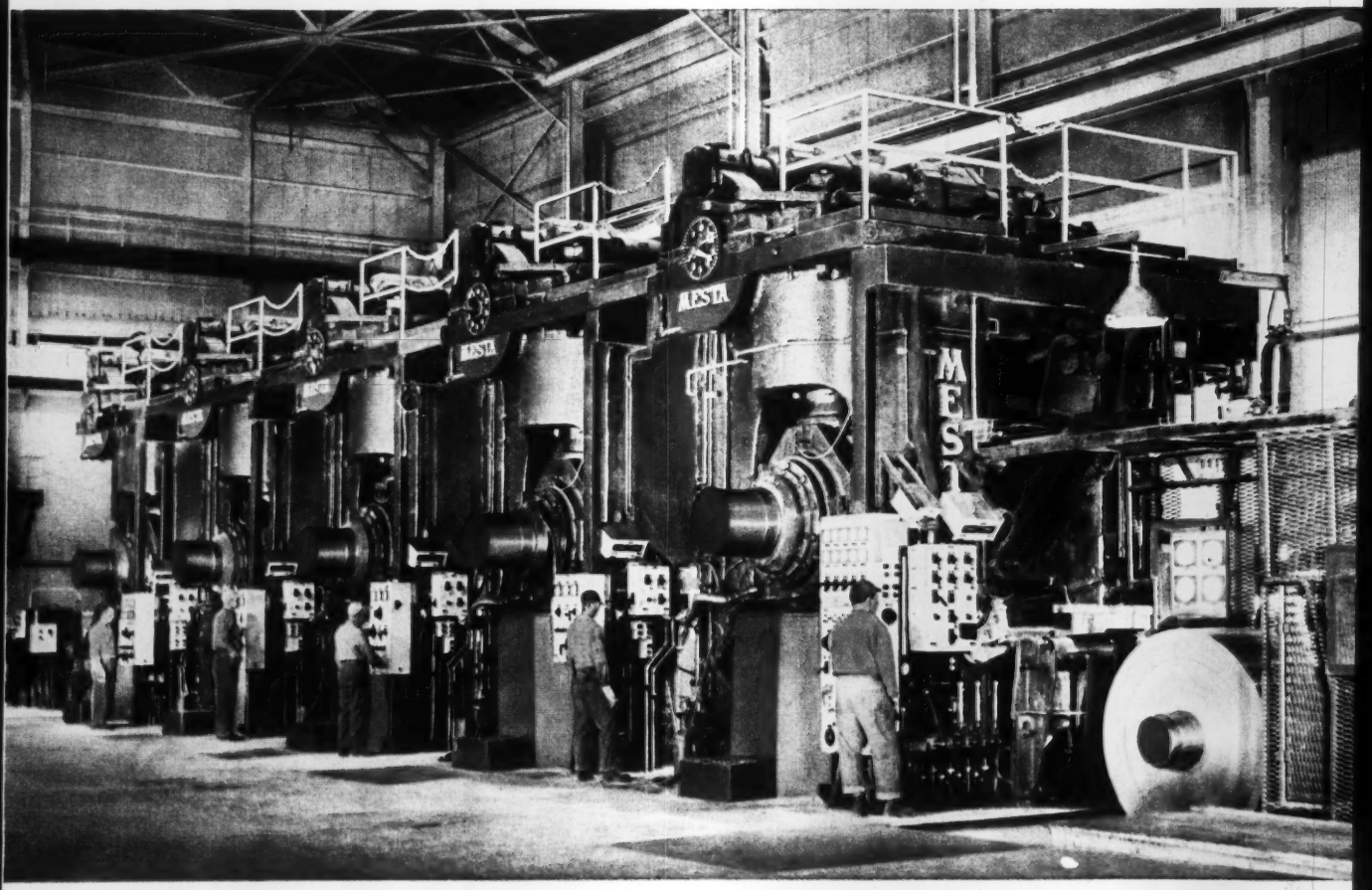
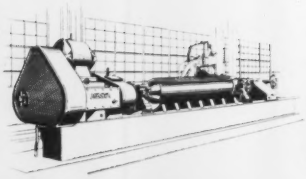
Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

MESTA Cold Mills



MESTA 48" Four-High, Five-Stand Tandem Cold Mill
Rolling Strip Steel for Tin Plate in Coils



Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA